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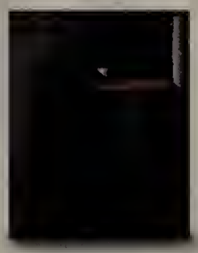

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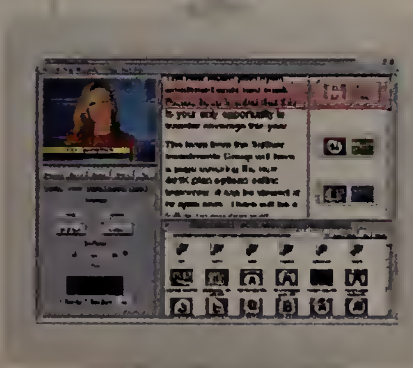

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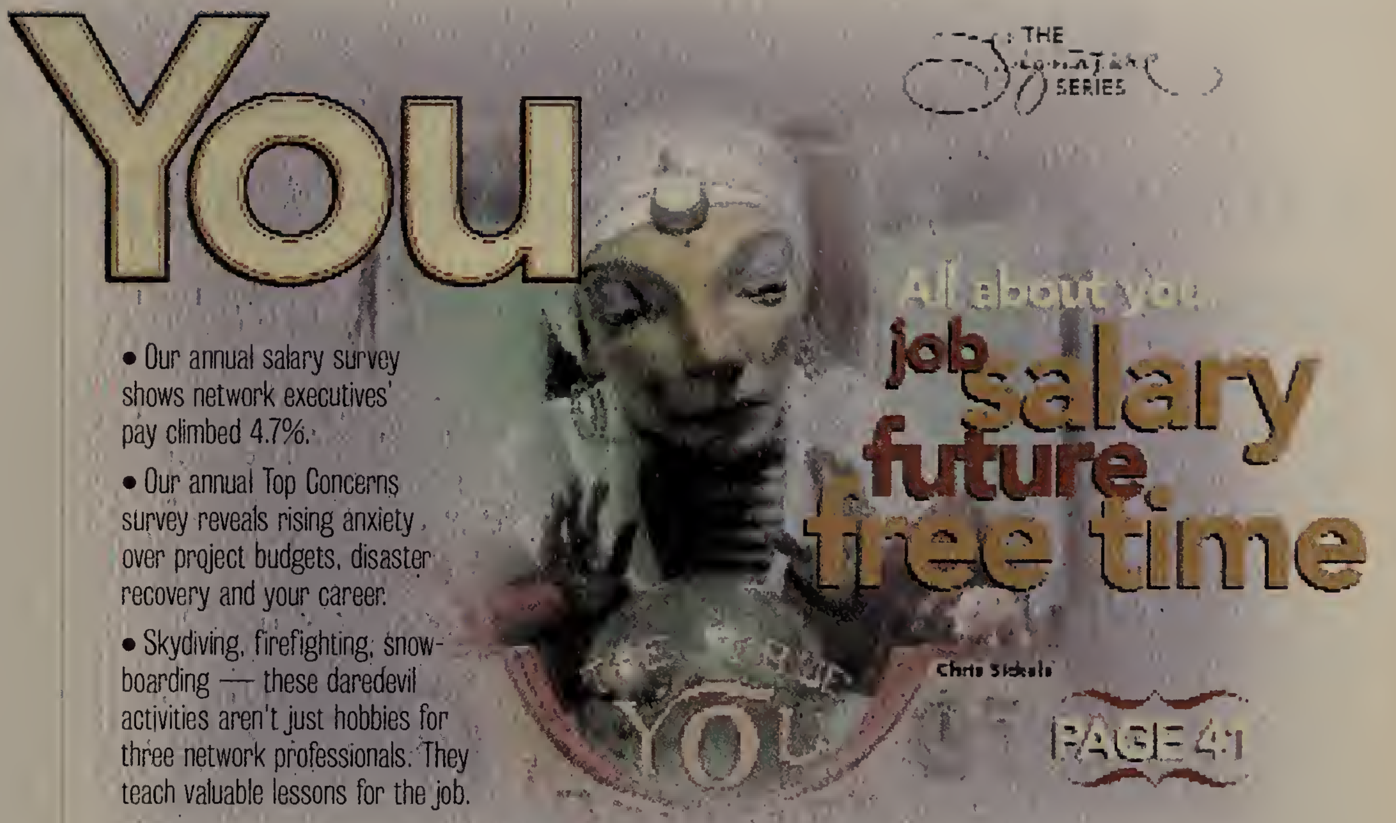

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- Our annual Top Concerns survey reveals rising anxiety over project budgets, disaster recovery and your career.
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Chris Sickels

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Columnists

Compendium

Putting his money where his blog is
Fusion Executive Editor Adam Gaffin introduces you to Phil Windley, CIO for the state of Utah. See why Windley thinks blogging is a productivity tool and will buy software for all his staff.
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Help Desk

Border Manager help
Columnist Ron Nutter helps a user with a variety of Border Manager problems.
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SOHO Tech

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Roller coaster
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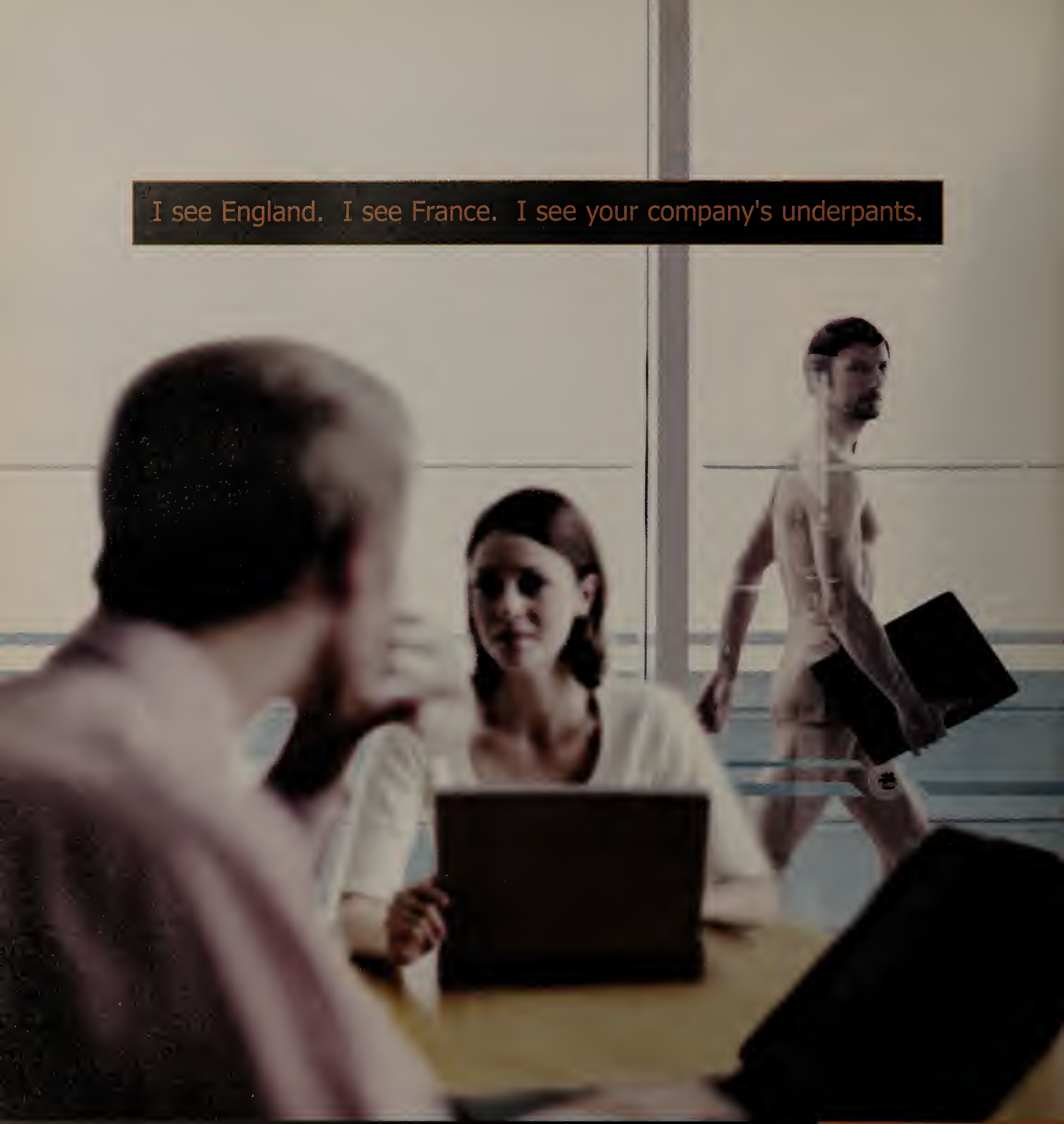
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News

Microsoft to offer stand-alone Active Directory

■ BY JOHN FONTANA

SAN FRANCISCO — Microsoft has made a dramatic change in its Active Directory strategy, saying it will ship a stand-alone version of the software separated from the operating system that finally provides network executives with a directory for Web-based applications.

At Burton Group's Catalyst Conference last week the company laid out a road map for Active Directory, including a version called Application Mode, a pure Lightweight Directory Access Protocol (LDAP)-based directory to support Web applications. Application Mode will be an option to the standard full install of Active Directory tied closely with Windows.

"It's about time," says Tom Gaylord, CIO for the University of Akron in Ohio. "There is great potential and obvious benefits for decoupling the directory. It can greatly simplify your architecture."

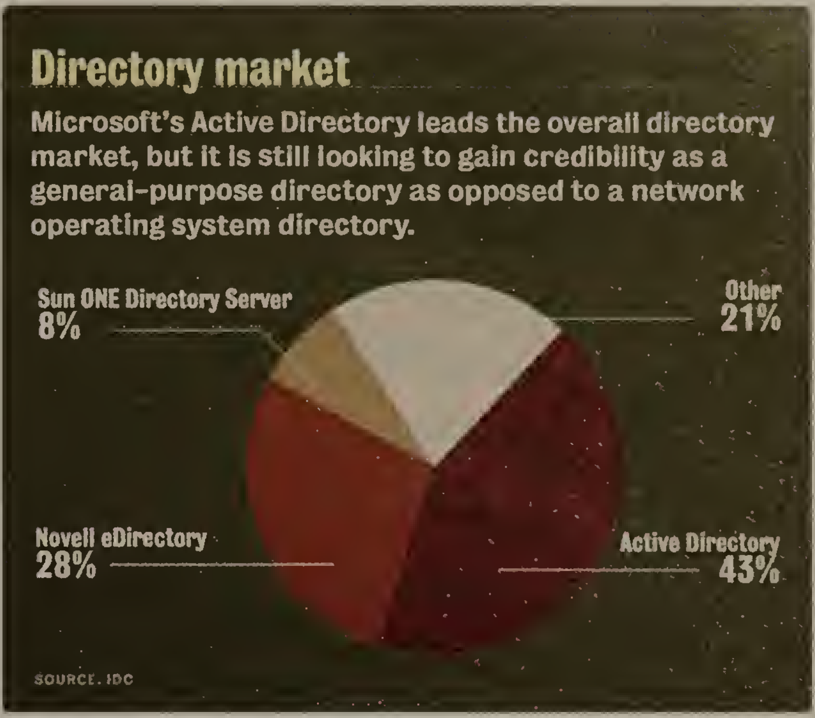
The company also says convergence of its directory and database is inevitable as it tries to create a universal data store and that it will ship Microsoft Metadirectory Services (MMS) 3.0 early next year as the first step in that convergence. Microsoft says it hopes the convergence will allow for more sophisticated data-driven applications, especially those built using Web services.

Application Mode gives network executives the flexibility to deploy the directory without having to set up an entire Windows.Net Server operating system environment, install it on a domain controller and activate services such as Kerberos, Domain Name or public-key infrastructure.

It also means users don't have to include Application Mode directories in their normal replication architecture or share the directory schema, the language that defines the directory, with other copies of Active Directory.

"What they are doing is making it easier to use Active Directory in an e-business role without having all the baggage of the network operating system," says Jamie

See Microsoft, page 18



Directory market

Microsoft's Active Directory leads the overall directory market, but it is still looking to gain credibility as a general-purpose directory as opposed to a network operating system directory.

SOURCE: IDC

Users find a smarter way to route

■ BY TIM GREENE

Basing your business on the speed and reliability of the Internet can be scary.

Consider EMC, the storage vendor that also runs a hosting business. It has T-3 links to three ISPs for reliability, but never could be certain that the router protocol determining which route to take was picking the fastest path. This situation made the company worry it might lose customers if any of its ISP connections became too congested.

But EMC has found a way around the problem by signing on for a new service from Sockeye Networks, a start-up that uses the nascent technology called route control to improve Internet connections. Sockeye is among a handful of companies — including RouteScience Technologies, NetVmg, Opnix, Proficient Networks and Radware — that offer route control. These companies use intelligent routing techniques to pick the most responsive and least expensive Internet path on-the-fly for users who have multiple ISPs.

RouteControl
EARLY ADOPTERS

Some service providers are starting to incorporate route-control equipment in their networks. For example, Internap developed its own route-control gear, and Equinix uses NetVmg products. Typically, at a customer site with multiple ISP connections — a configuration called multihoming — the Internet router or routers pick which ISP to use based on Border Gateway Protocol (BGP), which decides routes based on which link requires the fewest hops. That BGP assessment does not always choose the fastest link, nor does it consider which ISP costs less.

Route-control software, on the other hand, weighs these factors. A server appliance preloaded with route-control software is installed behind the firewall at a multihomed site as a peer to the Internet routers.

The appliance tests to determine how well each available ISP is performing and picks the best route based on that performance, but also by factoring in how much it costs to use each route. Because it is a routing peer, the device can change the Internet routers' tables using BGP so the routers direct traffic to the best ISP.

This resolves congestion concerns before they become a nightmare for EMC and its hosting customers, says Christopher Cook, network operations manager at EMC. "If the end user ran into a problem with our site, they wouldn't call us; they'd call their own help desk. That might eventually trickle in to us.

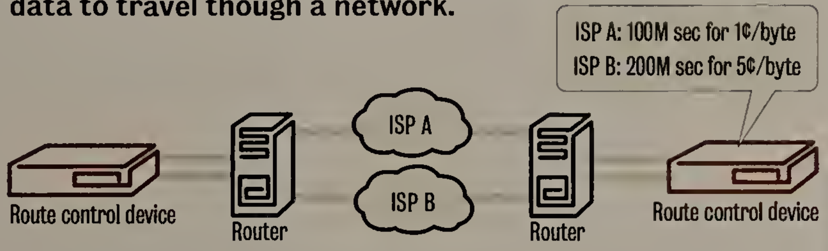
"After an hour or so doing network traces, we'd find a problem with an Internet provider — either theirs or ours," Cook says. "Occasionally an outage would last long enough to figure out that was the problem, but not long enough to do something about it. It's too much effort to change [routing] tables manually in time."

With Sockeye's service in place since May, EMC has received no customer complaints about performance dips, he says.

See Route control, page 16

Taking a better route

Route control vendors use different techniques to influence decisions on which is the fastest or least expensive path for data to travel though a network.



- Vendors such as RouteScience determine the best route among multiple service providers by reading network statistics and packet loss via a GIF file sent over links to user endpoints.
- Others such as NetVmg look at actual traffic to determine delays, lost packets or jitter.

Users wary of ID mgmt. complexity

Network executives take a look at access standards.

■ BY JOHN FONTANA

SAN FRANCISCO — Network executives say they understand the benefits of building infrastructure to centralize the management of users and access privileges but worry it will be a slow and painful process, especially when it comes to including business partners.

Identity and access management were the main topics at last week's Burton Group conference, which was a hotbed of activity among vendors eager to show their support for emerging standards such as the Security Assertion Markup Language (SAML) (see www.nwfusion.com, DocFinder: 1344).

Network executives at the annual conference said having a standardized identity and access management infrastructure promises many rewards. These include better overall

See Access, page 18

News Bits

Bill gives police wider e-mail access

■ The U.S. House of Representatives last week passed a bill that would let ISPs reveal the content of stored e-mail and other electronic communications to law enforcement agencies without requiring a court order but simply "probable cause." Law enforcement agencies also would be allowed to use "trap and trace" electronic surveillance in situations deemed to pose a threat to national security without first having to obtain court orders. The Cyber Security Enhancement Act of 2002 also would bring harsher punishment to those who perpetrate cyberattacks, with sentences ranging from 20 years to life if bodily harm or death results from a cyberattack.

C&W names new U.S. CEO

■ Simon Cunningham, CEO of Cable & Wireless Japan/Asia, will take over as CEO of the telecommunication firm's IP and data business in the U.S. Cunningham will replace Bill Austin, former CFO of Exodus Communications, who helped integrate Exodus' assets into the C&W business. Austin joined Exodus in July 2001 and led the restructuring and ultimate sale of Exodus to C&W in February. Cunningham will take the reins of the division — which includes Web hosting and content delivery services — when Austin departs in August. Cunningham has led C&W's Asian operations since 1999 and helped steer the business as it grew from being an international voice telephony operation to one delivering a range of communications services to business customers. He was at the helm as C&W integrated the assets of Exodus, Digital Island and PSINet Japan during the past year.

Software maker i2 plans massive layoffs

■ Supply chain software maker i2 Technologies said Tuesday that it plans to cut 30% of its 4,600-employee workforce after an unprofitable quarter marked by declining software sales. I2's second-quarter revenue was $120 million, a 52% drop from the $249 million posted in the year-ago quarter. Meanwhile, its software license revenue sank 75% to $26 million, from $106 million posted in the quarter one year ago. Software license revenue also dropped 56% over sequential quarters; in the first quarter of this year, i2 posted $59 million in software license revenue. In response, the Dallas company announced a restructuring plan aimed at trimming operating costs by at least 30% by year-end. Layoffs are part of the cost-cutting plan. In addition, i2 will move more software development work to India, migrate its software to more standard modules and work to reduce product overlap, executives say.

Search engine companies find each other

■ Internet search engine companies Google and Ask Jeeves have partnered to provide Google's paid listings on Ask Jeeves' Web sites. The deal is expected to generate $100 million during the next three years for Ask Jeeves and Google, the companies say. Beginning in September, Google will pitch its targeted paid listings product from its base of advertisers to users of Ask Jeeves' search sites. Ask Jeeves' agreement with Google replaces the arrangement it had with Overture Services, which last April also lost its contract with AOL Time Warner subsidiary AOL to Google.

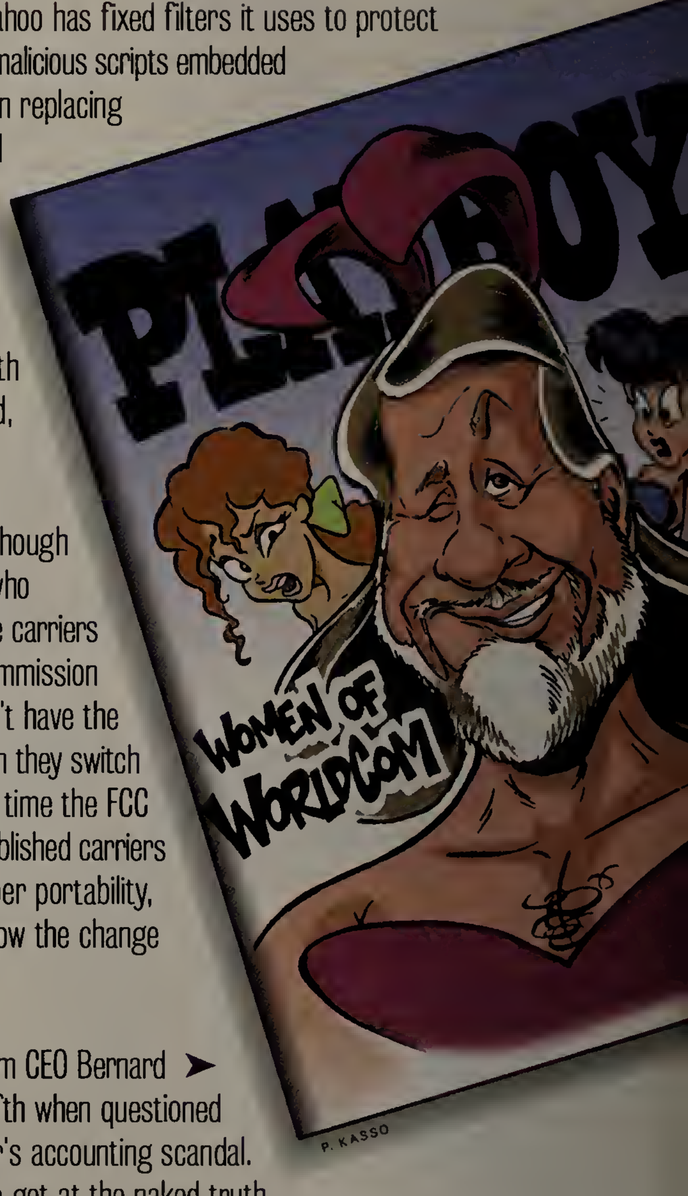
From Disney World to world of spies

■ Eric Haseltine, the research chief at Walt Disney's Imagineering division, which creates Disney's theme park attractions and high-tech entertainment, is leaving Disney to join the National Security Agency, the country's top-secret spy outfit. Haseltine is expected to lead a research and development team that will work on gathering intelligence and breaking codes.

AT&T, Sun tout joint sales effort

■ AT&T and Sun will sell Web site hosting and various other related services that will run on Sun hardware, the companies announced last week. Both will use their direct sales forces and shared marketing campaigns to try to expand AT&T's Managed Hosting Services business, AT&T says. The services included in the deal are Web hosting, security and network management, along with ongoing support.

■ TheGoodTheBadTheUgly



Yahoo cleans up its act. Yahoo has fixed filters it uses to protect users of its Web-based e-mail service from malicious scripts embedded in HTML-format messages. Yahoo had been replacing certain words or word fragments that could help trigger malicious scripts based on JavaScript. The problem was that Yahoo's replacements could make for nonsensical terms in documents, such as with the replacement of the "eval" in "Medieval" with the word "review" to result in the nonword, "Medireview."

You're stuck for now. Even though a third of the 130 million-plus Americans who subscribe to wireless phone services change carriers each year, the Federal Communications Commission ruled last week that such subscribers won't have the option of keeping their phone numbers when they switch until the end of next year. This is the third time the FCC has pushed out the deadline, bowing to established carriers that cite the high cost of supporting number portability, but are probably more concerned about how the change could benefit competitors.

Baring it all. Sure, ousted WorldCom CEO Bernard ➤ Ebbers and CFO Scott Sullivan took The Fifth when questioned by Congress about their role in the carrier's accounting scandal. But leave it to *Playboy* magazine to try to get at the naked truth. Fresh off its "Women of Enron" pictorial in August, the magazine has launched a search for "Women of WorldCom and Arthur Andersen" to pose for a future issue.

COMPENDIUM

The Web-enabled Etch A Sketch

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Symantec buys three security firms

BY ELLEN MESSMER

CUPERTINO, CALIF. — Last week's buying binge by Symantec netted the company three more security firms — Recourse Technologies, Riptech and SecurityFocus — that will provide critical core technologies and hundreds of new customers.

The deals also might bring confusion for existing customers as Symantec goes about integrating the acquisitions into its product lineup.

Symantec is buying Recourse for $135 million to gain its ManHunt intrusion-detection system (IDS). About 150 customers, including Ingram-Micro and the U.S. Department of Energy, use ManHunt to spot network-based attacks. ManHunt primarily uses what is called anomaly detection — flagging unusual or suspicious events — rather than IDS signatures that have to be constantly updated. Symantec intends to phase out its own network-based IDS, NetProwler, which has failed to win market share or perform well in IDS tests,such as those The NSS Group conducted last December in England.

NetProwler has been the "one disappointment" in Symantec's product line, Symantec CEO John Thompson said last week as the company reported record quarterly earnings of $316 million, up 39% from the same quarter a year ago.

"ManHunt is not just stronger than what we had, but [also than] what our competitors had" in network-based IDS, Thompson said. The company continues to have confidence in its host-based IDS called Intruder Alert, he said.

In phasing out NetProwler in favor of ManHunt, Symantec is redrawing its product road map in a way that customers might find confusing.

Last May, Symantec shipped Gateway Security, an appliance that combines firewall/VPN, antivirus detection and IDS in one box. Symantec says it hasn't decided whether to drop the NetProwler technology from Gateway Security and substitute ManHunt. However, Symantec will drop plans for a NetProwler IDS appliance, executive vice president Gail Hamilton says.

"ManHunt is not just stronger than what we had, but [also than] what our competitors had."

John Thompson
CEO, Symantec

"We'll be replacing and upgrading NetProwler pretty soon, migrating customers to ManHunt," Hamilton says.

Symantec also will alter plans for host-based Intruder Alert 4.0 that had called for merging some NetProwler network-based detection into the product later this year. Instead, there will be an effort to combine ManHunt and Intruder Alert in some fashion.

"These acquisitions by Symantec plug some very strategic gaps for them," says Pete Lindstrom, an analyst with Hurwitz Group. "They were being challenged in the R&D department."

Symantec is paying $145 million for managed security services provider Riptech to gain its Calterian monitoring system, which can collect input from firewalls and IDSes made by different vendors. Riptech has 500 customers.

Symantec will use Riptech's security monitoring system in its San Antonio security operations center and new centers it is opening in England and Germany.

The purchase of SecurityFocus for $75 million brings Symantec a service bureau providing security alerts on new threats and analysis that's expected to augment Symantec's efforts, which are mainly centered on antivirus response. SecurityFocus also runs the popular BugTraq mailing list.

The three deals come on the heels of another important acquisition by Symantec just a few weeks ago. Symantec purchased Mountain Wave for $20 million to gain its CyberWolf security management system. But that purchase also is causing detours on Symantec's product road map.

To meet commitments Mountain Wave made, Symantec this November will offer a second version of CyberWolf, but it will be sold only to customers who bought CyberWolf 1.0. At the same time, Symantec still intends to offer its previously planned security information management product, called Symantec Security Management System (SSMS) 1.0, in the fall.

"It doesn't have sophisticated real-time data correlation like CyberWolf, but SSMS does have the ability to normalize the security data from a number of security devices, including Check Point firewalls, Internet Security Systems RealSecure IDS and Network Associates antivirus products," Hamilton says.

Symantec plans to integrate the more powerful CyberWolf into SSMS next year. ■

Caching shake-up at Inktomi

Company says it will stop selling net products designed to improve Web site performance.

BY JENNIFER MEARS

Inktomi is exiting the Web acceleration market it pioneered in 1997, deal a major blow to the once-high-flying industry.

Inktomi announced last week in reporting its third-quarter earnings that it was reducing its content network group and would lay off 270 employees, or about 42% of its workforce. The company has lost more than $600 million since September 2000.

In a conference call with analysts, David Peterschmidt, CEO of Inktomi, said the decision was prompted by the erosion of Inktomi's service provider customers and a tougher-than-expected entry into the enterprise market.

"Though we built some of the best products in the industry, the outlook for this market is still weak, and we don't see the markets going at the pace that we initially anticipated," Peterschmidt said. He said the company will continue to support existing content network customers and channel partners.

Analysts say they aren't surprised to see Inktomi ditch caching to focus on its search software business, a technology that has had more success in the enterprise market. Inktomi has more than 2,500 customers using its search software and says revenue for the software in the third quarter was up 16% over the third quarter last year.

Inktomi's move does lessen the amount of competition in the market, but isn't a good sign for caching survivors such as CacheFlow.

"I look at it as a serious blow because it shows that maybe there is not enough money to be made in this market for companies to survive around this business plan," says Richard Sun, network systems engineer at Volera customer W. L. Gore & Associates of Newark, Del., best known for its Gore-Tex fabric.

F5 Networks earlier this month announced that it would no longer sell its Edge-FX cache, powered by Inktomi software, because of lagging demand.

"This is not a good thing for the smaller vendors," says Lawrence Orans, an analyst with Gartner. "The fact that Inktomi and F5 have left the market makes it more difficult for smaller vendors to justify their value. It definitely casts a pall over things."

The caching market is not the same as it was two or three years ago when Inktomi was riding high on the dot-com wave. At that time, service providers such as AOL turned to Inktomi to provide value-added services to content companies seeking better performance.

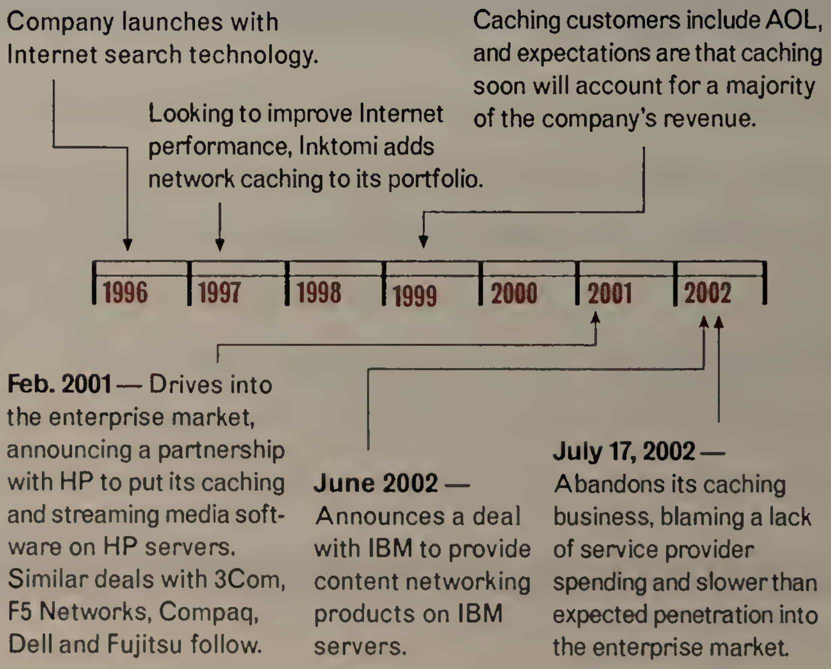
The market took an initial hit in 1999 when Akamai Technologies entered the scene, placing its own network of caching servers on the Internet and selling the service to content distributors rather than to ISPs.

"The genius in what Akamai saw that Inktomi and the other caching vendors didn't was

See Inktomi, page 14

Back to basics

Inktomi is leaving the caching business, which hasn't panned out, and redirecting itself to its search business. Here's how the company evolved:



Company launches with Internet search technology.

Looking to improve Internet performance, Inktomi adds network caching to its portfolio.

Caching customers include AOL, and expectations are that caching soon will account for a majority of the company's revenue.

Feb. 2001 — Drives into the enterprise market, announcing a partnership with HP to put its caching and streaming media software on HP servers. Similar deals with 3Com, F5 Networks, Compaq, Dell and Fujitsu follow.

June 2002 — Announces a deal with IBM to provide content networking products on IBM servers.

July 17, 2002 — Abandons its caching business, blaming a lack of service provider spending and slower than expected penetration into the enterprise market.

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Reports: WorldCom close to bankruptcy

FCC chief says a buyout by a Baby Bell could pass regulatory muster.

■ BY JORIS EVERS AND CARA GARRETSON

WorldCom late last week had bowed to the inevitable and was planning to file for bankruptcy protection sometime in the coming days, according to reports in *The Wall Street Journal* and *The New York Times*.

Meanwhile, the head of the Federal Communications Commission, Michael Powell, signaled his willingness to let any interested regional Bell operating company purchase the distressed carrier in what not too long ago would have been considered a potentially monopolistic deal unlikely to win regulatory approval.

WorldCom has arranged for as much as $2.5 billion in so-called debtor-in-possession financing to continue operating after a bankruptcy filing, according to the news reports. Three financial institutions — J.P. Morgan Chase, Citigroup and GE Capital — are providing the financing.

FCC Chairman Michael Powell says his commission might approve a sale of WorldCom to a Baby Bell.

WorldCom's businesses outside the U.S. are not expected to file for bankruptcy protection.

A WorldCom spokeswoman in the U.K. declined to comment.

Companies that file for protection from creditors under Chapter 11 of U.S. bankruptcy law can continue to operate while restructuring their finances. The bankruptcy filing, therefore, should not have an immediate effect on WorldCom's customers.

On Thursday, WorldCom agreed to freeze some assets in a deal with 25 banks that sued the company in the U.S. District Court for the Southern District of New York. The banks sued WorldCom in an attempt to recover a $2.65 billion unsecured loan they provided in May, but will now halt their legal efforts.

WorldCom's spiral started last month when accounting irregularities forced the company to restate past earnings by almost $4 billion. WorldCom is the second-largest long-distance phone company in the U.S. and one of the world's largest Internet backbone operators. The company's bankruptcy would surpass that of Enron as the largest in U.S. corporate history in terms of assets.

As reports of the imminent bankruptcy swirled, Powell indicated that he would be open to the possibility of a Baby Bell acquiring the company. In an interview with *The Wall Street Journal*, Powell described the communications industry as in a state of "utter crisis," and said the troubles were of sufficient magnitude to justify considering such a merger.

> **"Chairman Powell's march toward unregulated monopoly will certainly not serve the consumer well."**
>
> **Mark Cooper**
> Director of research, Consumer Federation of America

Government as white knight

Some industry experts say the FCC has little choice.

"There's been a lot written and said in the last couple weeks [about the effects] of the demise of WorldCom, especially for Internet traffic and e-mail," says Rick Brecher, an attorney with law firm Greenberg Traurig in Washington, D.C., who follows the telecom industry. "If that's a real concern, I would think that the government would move heaven and earth to allow a financially viable company to take over WorldCom . . . to keep that Internet traffic flowing."

Allowing such a merger would be viewed as a significant departure for the FCC, because its regulations related to the Telecommunications Act of 1996 have been designed to promote competition to Baby Bells, not consolidation.

The FCC has the authority to approve or deny proposed mergers in the telecom industry, so any Baby Bell looking to snap up WorldCom would have to go through the approval process and prove that the merger is in the public interest. Any such acquisition proposal would not be guaranteed regulatory approval, Powell cautions.

There are other regulatory hurdles that RBOCs must pass to provide long-distance service. Under current telecom law, they cannot provide long-distance services in their regions unless they have passed the FCC's criteria for opening their own local networks to competition.

Referred to as Section 271, this requirement forces Baby Bells to provide competitors such as start-up local phone companies and long-distance providers fair access to their local telephone infrastructures before they can launch long-distance services in their regions. None of the Baby Bell companies has met the Section 271 requirements in all the states in their regions, but a few are coming close.

One consumer advocacy group spoke out against Powell's comments, saying that letting a RBOC acquire WorldCom would be a blow to competition.

The FCC "should ensure that the lucrative area of advanced telecommunications services, including high-speed Internet, is open to all competitors on a nondiscriminatory basis," says Mark Cooper, director of research with the Consumer Federation of America. "Chairman Powell's march toward unregulated monopoly will certainly not serve [the] consumer well."

Evers and Garretson are correspondents with IDG News Service's Amsterdam and Washington, D.C., bureaus, respectively.

Avaya strengthens IP phones

Wireless components highlight new devices.

■ BY PHIL HOCHMUTH

BASKING RIDGE, N.J. — Hoping to extend its PBX market success into the IP realm, Avaya last week unveiled new IP phones and added Wi-Fi into its IP telephony mix.

The Avaya 4620 IP Telephone comes with XML-capable Web browsing software, accessible through a screen display and an infrared port that can let the phone connect to an infrared-enabled PDA or other device. The 4602 phone is a new basic-feature phone.

Also introduced were an 802.11b-compatible wireless IP phone and a gateway system, and a new version of Avaya's softphone.

The 4620 phone comes with programmable touch-pad buttons and function labels on the device's LCD screen, along with four programmable application buttons and an XML-based Web browser.

An integrated switch port is included for connecting a PC to a LAN over one cable drop, and an integrated infrared port lets a PDA interact with the device — such as dialing a phone number from a handheld address book application.

The 4602 phone comes with a two-line LCD screen and two programmable feature keys.

Avaya's IP phones work with the company's ECLIPS (Enterprise Class IP Solutions) IP PBX products, such as IP600 IP PBX and the S8700 Media Server, which compete with products from 3Com, Alcatel, Cisco, Nortel, Siemens, and Shoreline Communications.

Avaya's 4620 IP Telephone, which can communicate with a PDA through an infrared port, will be available in October for $500.

Avaya's Wireless IP handsets, part of the company's Wireless IP Solution product bundle, are resold from Spectralink, a Wi-Fi IP phone maker. The phones can interoperate with standards-based 802.11b endpoints, and include features such as caller ID, conferencing and multiple line appearances.

The phones require a Wireless IP Solution server and/or a gateway. The gateways can handle up to 16 handsets per device. The addition of a server can allow up to 640 phones on a network.

The new version of Avaya's IP Softphone can interact with an Avaya IP telephone handset, letting end users dial numbers through the application — which can access directories such as Microsoft Outlook — then talk using the IP handset.

The 4620 phone costs $500 and the 4602 phone is $200. The Wireless IP Telephone Solution starts at $730 for the handsets, and $3,950 and $2,000 for the servers and gateways, respectively.

Also introduced was a 2450 Digital Telephone — which looks identical to the 4620 — for $624. The new IP handset and softphone release will be available next month, while the Wi-Fi IP telephony gear will be available in October.T

The digital handset is available now.■

Corrections

■ In a review of handheld network analyzers, the name and Web site for Fluke Networks were misidentified. The correct Web site address is www.flukenetworks.com.

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Vendors pursue gold at end of Rainbow

■ BY JOHN COX AND TONI KISTNER

The race to meld wireless LANs and cellular data nets is heating up, but whether the effort will be worthwhile remains unclear.

Reports emerged last week that a group of industry heavyweights, including AT&T Wireless, Cingular, IBM, Intel and Verizon, might create a venture that would offer a nationwide wireless Ethernet-based network.

Separately, Lucent says it is partnering with wireless product and service companies to help carriers give end users secure access to corporate networks via public-access 802.11b hot spots or 3G cellular networks.

The public access services envisioned would give end users secure connectivity and one bill.

Utah could use such a service to give police and other public safety staff more flexibility in accessing applications, says Phillip Windley, the state's CTO.

Police cruisers use a sub-megabit-per-second Cellular Digital Packet Data net for most data communications. Adding a wireless LAN link that presumably would be closer to Wi-Fi's 11M bit/sec would be valuable for moving large reports or image files back and forth.

"If someone offered that [kind of service] to us, we'd love it," Windley says.

Companies reportedly participating in Project Rainbow, as the industry heavyweights' effort was called in *The New York Times* story that first mentioned it, declined to comment on whether anything is in the works. But observers expect there is.

"This is what everyone is going for these days," says Allan Scott, Director Business Management & Global Marketing with Agere Systems' Orinoco wireless LAN group, which is in the midst of being sold to Proxim.

He cites Wayport and MobileStar (now part of cellular carrier VoiceStream), and aggregators Boingo and Joltage, as examples of companies building relationships to cut capital spending requirements and create roaming and billing arrangements to make wireless LAN footprints larger.

"It was just a matter of time before we saw the large carriers jump into this with both feet," Scott says.

The concept of such a unified wireless service is technically feasible, observers agree. IPass already offers software to make such services possible on a relatively small scale.

IPass created client and server software for secure wireless and dial-up connections between client devices and corporate firewalls. It also designed patent-pending algorithms to calculate shared billing arrangements with the back-end billing systems of 180 network providers with which it has contracts. IPass counts Intel among its original investors.

The company might be a player in Rainbow, if it comes to fruition, and in the Lucent project.

"The package from Rainbow would have to have a player like us involved to bring this to the enteprise," says Jon Russo, vice president of marketing. Russo declined to comment on whether IPass has been involved in such talks.

Keys to success

For a unified wireless service to be successful, end users must be able easily to find access points and log on to them, and have client software that's easy to install, use and maintain.

"The idea of 'ease of use' will be critical," says Ray Martino, vice president of network products for wireless equipment vendor Symbol Technologies. "The network technology features are there. But most [wireless] applications are far more complex than, say, hitting the AOL icon on your PC's browser or the send button on your cell phone.".

Security, of course, is an issue, and opinions are divided about how effective it can be in a unified wireless access scheme. VPNs are touted as the state-of-the-art means to create an encrypted, authenticated remote connection to a corporate firewall. But Martino argues it's a bit more complicated than that.

"It's easy to say that corporate users will have a VPN," he says. "But VPNs are not widely deployed. And users may want to go to other places on the Internet than just their corporate site."

One of the toughest issues will be how to price such services, which will be offered by network providers working in conjunction with an array of infrastructure, application and client device makers.

Agere's Scott suggests users might be willing to pay by the day, perhaps $10, when they need such a service, rather than a recurring monthly charge of, say, $80 to $90, especially if the unified wireless service has a limited geography. If usage — and productivity — increases, a company then might then be willing to pay a monthly subscriber fee.

One question still unanswered is whether providers can make any money from blending wireless LAN access and cellular networks.

"We'd love to see it be successful," Symbol's Martino says. "But you have to build it before [enterprise users] will come, and that's not cheap."

Martino also says that there may be relatively few corporate users that travel enough, and need access often enough, to make this marriage of broadband and narrowband wireless access worthwhile.

Martino spends 30% to 40% of his time outside the office. But only when a flight is delayed or canceled does he find himself with extra time and therefore the desire for a wireless LAN connection to the corporate network.

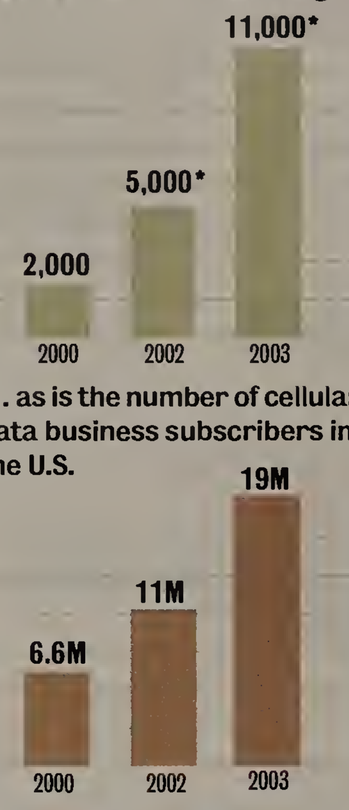
One project that may make it cost-effective for carriers and enterprise users is that of Pass-One, a nonprofit group organized in June to hammer out global standards for 802.11b data access, roaming and unified billing.

Pass-One, if it reaches acceptance among enough carriers and equipment makers, could make it possible to deliver global wireless data roaming. And perhaps even more importantly, it could foster regional agreements that would appeal to many companies that need a wireless net "footprint" that covers a specific service area or sales region.■

Wireless data nation

The number of wireless LAN hot spots in the U.S. is booming . . .

. . . as is the number of cellular data business subscribers in the U.S.



* Estimated

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Inktomi

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simply who would pay for cache acceleration. And that was people with content that wanted it delivered quickly," says Peter Christy, principal analyst with NetsEdge Research.

Inktomi forged on. But when the economy took a turn for the worse and Inktomi's service provider customers stopped spending, the company was forced to look to the enterprise market. It forged OEM deals with companies such as Hewlett-Packard, 3Com and Dell, but found the demand wasn't what it had expected.

"The deal they struck with their OEMs was not all that lucrative for them," says Cindy Borovick, an analyst at IDC. "Their assumption was that their OEMs would push the volumes out and they'd make it up on the volumes to the enterprise. That didn't happen."

In trying to increase demand, Inktomi and competitors such as CacheFlow and Volera added features to their caches such as security, intelligent content management and content filtering to provide companies with more than simple warehouses for static content. The transition wasn't easy, and bigger vendors such as Network Appliance and Cisco have had better luck in addressing customer need.

"As a stand-alone business, caching is hard to support because customers in the enterprise who are deploying caching-oriented solutions typically have them tied into other initiatives that they're doing in their remote offices," says Amit Pandey, senior director of content delivery marketing at Network Appliance, which IDC rated the No.1 caching company in 2001, with a 24% market share. "Caching alone isn't enough."

While enterprise IT spending has been ratcheted down, Cisco is seeing growing demand for its content networking products, including caching.

"We're seeing a ton of demand, and it's partly the result of the fact that we've added a lot of enterprise features that make the product very valuable to large, small and midsize businesses because of its role as an integrated network platform," says Jim O'Toole, CTO for the content networking group at Cisco.

According to IDC, the caching/content network market is expected to get some rejuvenation this year, after a dull 2001, as corporations start buying these products.

The market skyrocketed in 2000, with revenue jumping from $147.5 million in 1999 to $430 million in 2000, according to IDC. In 2001, revenue held relatively steady at $430.6 million, but IDC expects the market to pick up this year, with revenue reaching $560 million by the end of 2002.■

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EMC, HP work together on storage mgmt.

Move should help customers more easily control multivendor networks.

■ **BY DENI CONNOR**

Users should soon be able to manage storage gear from EMC and Hewlett-Packard through common interfaces, thanks to a technology exchange the vendors announced last week.

The agreement is the latest in a series of moves by storage companies to simplify managing their products in multivendor shops.

EMC and HP announced separate multivendor storage-management efforts last year, and both companies are among a group of vendors developing a standard called Bluefin for managing multivendor Fibre Channel-based storage networks.

Meanwhile, sources say HP and IBM may announce a technology swap as soon as this week that could make managing their respective XP and Enterprise Storage Server, or "Shark," products simpler for customers that have both.

As for EMC and HP, the companies will share APIs for a variety of high-end storage products, including EMC's Symmetrix and Clariion systems, and HP's XP, Enterprise, Virtual and Modular arrays. The deal extends a pact that EMC and Compaq signed late last year before Compaq became part of HP.

The exchange of APIs will let storage software from the two companies autodiscover attached storage systems, and gather information, configuration and performance information for both companies' storage offerings. The exchange also will let the software create and configure partitions and build topology maps, perform remote snapshots and clone disk volumes for availability and fault tolerance.

HP is expected to use EMC APIs in its storage-area network (SAN) management, volume management and replication software.

EMC will use HP APIs in its SAN management, monitoring, load-balancing and failover software, and its WideSky middleware. WideSky is a development environment for managing multivendor storage networks.

"We had management consoles everywhere before EMC and [Compaq] exchanged APIs," says Jose Guereque, IT manager for Axtel, which has a network that includes EMC Symmetrix devices and HP servers and Enterprise Modular Arrays.

"Now we manage our EMC and Compaq storage from the same console," Guereque says. "When EMC arranged to manage [Compaq's] APIs, we leveraged that in order to diminish the time and resources we were using to do the integration tasks." ■

Dynamic duo

Storage products from EMC and Hewlett-Packard accounted for about **43%** of the external RAID market and more than **60%** of the SAN-attached storage market last year, according to IDC.

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Route control

continued from page 7

> **"Seventy to 75% of the time, Sockeye could have picked us a better route vs. the BGP choice."**
>
> **Christopher Cook**
> Network operations manager, EMC

Other early users, such as ADP Brokerage Services in New York, chose route-control technology for added network reliability. The firm, which uses two connections to Internap for its Internet access, says it believes Internap's use of route-control technology means it will suffer less downtime. Internap points of presence link customers to any of nine ISPs that meet at Internap POPs, with route-control gear choosing the ISPs that perform the best.

Many choices

With so many ISPs to choose from at each POP, it is unlikely that ADP will lose its use of the Internet, barring a core Internet meltdown, says Joe Turnbull, senior director of network engineering for ADP, which handles transactions for financial firms and stock markets. "You need diversity in a big company for reliability," he says.

Other early adopters of route control only want to improve performance. Cook says that according to reports generated by the Sockeye equipment, the route-control technology makes better decisions than BGP alone.

"Seventy to 75% of the time, Sockeye could have picked us a better route vs. the BGP choice," he says.

FreeMarkets, a Pittsburgh company that sets up online auctions, finds that route-control gear from RouteScience makes significant performance improvements, says Kevin Gennuso, senior network architect for FreeMarkets.

If the device can force an 80-msec to 100-msec improvement per connection, that can add up to an improvement of seconds for downloading a page containing many objects, Gennuso says. And that is valuable to FreeMarkets.

"Our biggest concern is increased performance to our customers. Performance is key," he says.

Before embracing route control, users should consider that it entails adopting multihoming — no easy feat in itself. The benefit is that once configured, route-control gear sits on the network requiring little or no maintenance, and if it fails, BGP takes over until the box can be fixed, users say.

Potential customers also should consider that most of the vendors in this market are start-ups, facing the usual challenges of securing funding, The Yankee Group says in a report on the technology. And at prices ranging from $30,000 to $250,000, the cost might squeeze out some who might otherwise be interested. "Few large businesses currently have the necessary budgets to afford the large up-front costs," the report says.

It can be difficult to know just how much better route-control software makes the end-user experience. Dallas mortgage company CTX Management uses Proficient route-control equipment to speed performance for users in CTX's 200 branches that access the Internet over a frame relay network to the Dallas headquarters, which in turn has two T-1 Internet connections from SBC Communications and Cable & Wireless.

Is route control for you?

Early users say route control technology can help make better decisions about which ISP to use at a multihomed site, but note possible drawbacks.

- Making too many route changes risks creating separate congestion problems.
- Larger Internet routers might be needed.
- Saving money might require renegotiating ISP contracts.
- Setting up multihoming requires major investments of time, money, equipment and advanced router expertise.

But CTX also recently has started caching frequently used sites to improve performance, says Harry Hixson, CTX's senior vice president of IS, muddying just how much credit route control can take for improvements.

With its focus on performance, CTX sets its Proficient gear to choose ISPs based solely on performance, not cost. "Right now, we're just looking at the fastest routes," Hixson says. But he says he hopes the technology also saves the company money in the future.

CTX plans to sign with a third ISP within a month, Hixson says, looking for a usage-based contract. That way, as the company uses Internet-hosted video broadcasts to train mortgage officers, it can pick the least expensive route that also meets performance requirements.

"As we do more broadcasts, we want to use the Internet connections more efficiently," Hixson says. The technology enables these broadcasts, which saves on the travel costs that live training would impose.

The large investment to buy route-control gear requires cost justifications that are difficult to quantify, users say.

For instance, how do you measure costs not incurred, chasing down the cause of problems that are avoided, FreeMarkets' Gennuso says. These costs might be considerable because such diagnostics can be expensive.

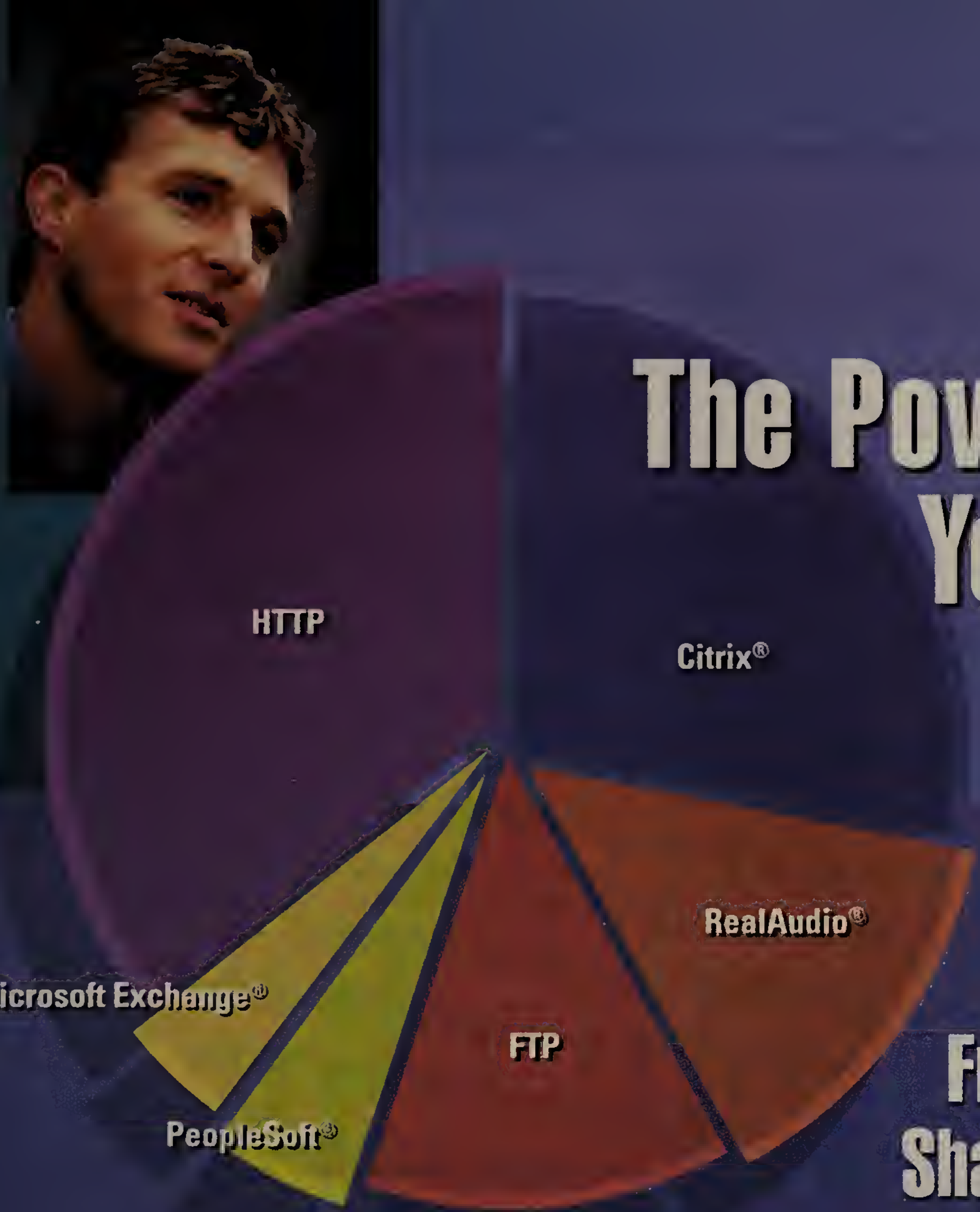
"High-level people on both sides can get involved," he says.

More savings

Another potential savings could come from better use of Internet links that are priced based on use. EMC is in the midst of renegotiating its flat-rate, T-3 access contracts with AT&T, C&W and Genuity. Rather than paying for the whole pipe regardless of how much it is used, Cook says he hopes to sign usage-based contracts that ultimately will cost less.

"We think we can save more on our [T-3] costs than what Sockeye costs us each month," he says.

Regardless of the savings, the performance boost can be worth the expense, Gennuso says. "We realized that even if we didn't get an instant return on investment by pushing traffic over the least-cost link, it would definitely help us from a customer perspective," he says. "It's a lot more important for us to serve the pages up right." ■



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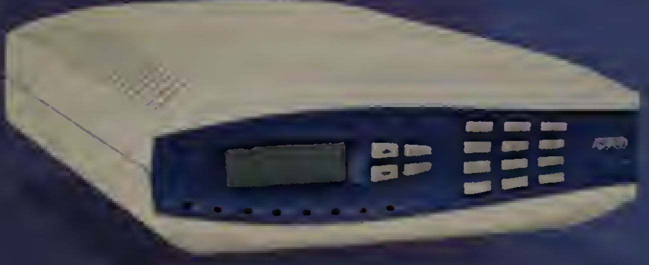

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Access

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security; fewer user accounts to manage; better control over who is on a network and what they are doing; centralized management of account creation and deletion; and ultimately the ability to work, or federate, with similar infrastructures on partner networks.

They said having such an infrastructure it is key if electronic commerce and Web services are ever to scale. And in fact, Web-based and newly developed applications plug fairly easily into such an infrastructure.

The problem is that most large companies have islands of authentication and authorization services spread across their networks and built into each application. In order to take advantage of a new identity management infrastructure, they would have to rebuild those applications to recognize and defer security to the centralized system.

"So far we have done two of about 200 applications. At least that is a step in the right direction," said Fred Wettling, enterprise infrastructure architect for Bechtel in San Francisco and president of the Network Application Consortium, a user group.

"These are hard problems and things we see organizations struggling with," said Patrick O'Kane, chief architect for ePresence, a directory consulting firm. "If you have an application with an authentication mechanism, you have to remove it and put it in the directory. Then you have to determine how much of the authorization system you will have to extract. And the big issue is once you do this, it has to be scalable and reliable, but you have to realize some applications will never plug into the infrastructure."

Wettling said he'd prefer vendors not to build any security into their applications, which is the way Bechtel builds its own applications. That way Wettling can plug them into what he describes as a security service that includes identity management but also takes into account all his network systems, services and applications.

Wettling said single user identity is complicated by the fact that he also must define those identities in context.

"Is that person signing on to get e-mail, for doing administration, to do a funds transfer? And I have IDs that are not people, they are machines," he said.

Perhaps an even larger sticking point is standardized access policy. Wettling said policies, along with definitions of roles and groups used to grant access based on an attribute a user has attached to his or her identity, need to be standardized and every application retrofitted to understand those definitions.

Keeping track

Identity management systems, which work hand-in-hand with directories, include a host of components.

Component	What it does
Web-based access management	Driven by a set of policies to control access to systems, applications.
Provisioning	Automatically creates, maintains and deletes accounts across network.
Identity administration	Maps user identities into a single or reduced number of profiles.
Portals	An aggregation point where users present one identification for access to corporate resources.
Public identification standards	XML-based standards such as the Security Assertion Markup Language used for authentication and authorization.

"We would like to define user roles in one place and share them among applications," Wettling said. "Security needs to be a service, but applications today require us to define those roles inconsistently and in various places."

Other large companies are facing similar issues.

"I have my digital identities stored in the directory," says an application security specialist who asked not to be identified. He says he has nearly 200,000 users and more than a million other external accounts.

"We have a portal and Web access management software based on the corporate directory, but we don't do authentication in the directory so we have to write custom code if we want to bring in our applications," he said.

He has potentially tens of thousands of authentication scenarios spread across his operating systems, applications and servers.

"It's testing all this stuff," he says. "You have RACF, [public-key infrastructure], network custom code, vendor code. It all has to work 24-7 with 0% for failure."

He agrees with Wettling that the biggest issue might be establishing a set of standard policies.

"But that is a business issue, not a technology issue," said the application security specialist. "What is a policy? What is a role? How can I get an enterprise consensus on defining those things."

While that isn't easy, it gets even more complex when you start to involve business partners.

Technologies such as the XML-based SAML will help. Last week, the specification won backing from the Liberty Alliance and Microsoft and is now nearly a de facto standard.

"What we have learned over the past two years is that it is not trivial to create this security umbrella," said Ed Truitt, a security specialist for a major petroleum company, which is in the pilot phase of a provisioning system that manages creation and deletion of user accounts for nearly 100,000 employees. "We've been working on this for two years, and now it takes us about six to eight weeks to add an application to the system."

Once established, an identity management system creates its own security issues. With a centralized identity and access control service, any hacker attacks or failures can bring down every application attached to that service.

And once that system is shared among business partners, companies start to lose control of their users' identities.

"My concern is that everyone will be so excited about this they won't think of the policy issues and loss of control," said Pamela Dingle, a consultant with Nulli Secundus. "People need to consider that convenience and security are on opposite ends of the spectrum."

Bechtel's Wettling remains optimistic, though. "Evolution will take care of a lot of these problems," he said. ■

Microsoft

continued from page 7

Lewis, CEO of Burton Group. "E-businesses and extranets created a need for a general-purpose, vanilla LDAP directory to authenticate users. What Microsoft is doing is a sign of maturity."

Lewis says it also is the start of serious competition with directories from Sun and Novell.

"People have been turning to those vendors' directories because it has been too hard to deploy Active Directory as a general-purpose directory," he says.

Microsoft is reacting to Web-based directories from competitors including Sun ONE Directory Server and Novell eDirectory, which network executives have preferred as Web-based directories.

Sun made its own directory upgrades last week, releasing the final beta of Sun ONE Directory Server 5.2, which includes enhancements such as four-way multimaster replication across a WAN and support for 64-bit caching. Novell also announced that eDirectory would be the foundation of an identity management system called Project Saturn.

Network executives have asked Microsoft to offer a stand-alone version since Active Directory shipped.

Microsoft, without much success, had tried to convince users that by adding Web-based features, such as a standard LDAP user description called inetOrgPerson, its network operating system (NOS) directory was suitable for Web-based deployments.

"This is groundbreaking for us," says Jackson Shaw, product manager for directory services for Microsoft. "It's an LDAP directory to support applications."

In addition, Shaw says, the Application Mode directory would integrate with the NOS version of Active Directory to share user-authentication duties.

Application Mode will ship 30 days after Windows.Net Server, which is scheduled to ship by year-end. The first-release candidate of the .Net operating system is due next week.

Even though Active Directory now can run on its own, it still only runs on top of Windows, much like Microsoft's other server applications, and only with the .Net operating system and Windows XP Professional. The XP support lets developers install the directory right on their desktops.

The Application Mode directory is a near-term change for Microsoft, but the future holds even bigger changes as the company creates a universal data store around its Yukon technology.

Microsoft says it believes the directory and the database will be united in the future.

"How many people can program against a directory? A large number. How many applications use a database? A large number," says Kim Cameron, directory architect for Microsoft. "Right now your identity and authentication data is segregated in the directory with its own protocols; it is hard to join with the database." Cameron says a lot of challenges have to be overcome to converge the two, but that Microsoft eventually will integrate the two. He would not specify a time frame.

Competitor Oracle has its own directory and Internet File System built on a database.

Cameron says the convergence would have many benefits. As an example, he demonstrated at the Catalyst Conference an XML-based technology called Polyarchy that lets users create different hierarchical views of data, such as an organizational chart and a set of discussion lists. In essence, it is a sophisticated White Pages application that can display key relationships between people and data. The linchpin to creating such lists is that user identity information and data all reside in one repository.

"We wanted a new way to visualize and search and make directories more capable. Users want integrated views so we have to store data differently," he says.

The first crack at changing that storage will ship with MMS 3.0, which will display directory information as SQL tables. MMS 3.0 is a metadirectory that lets information be joined in a single logical entity. It includes a Preview mode that works much like a Print Preview, letting users see what changes will look like before they are made.

Microsoft also has integrated MMS 3.0 with Visual Studio.Net to create a standard development environment. Support for the Directory Services Markup Language, basically an XML representation of LDAP, is being added to provide XML application developers with easy access to directory services. ■

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Security vendor remakes itself

■ **BY ELLEN MESSMER**

MOUNTAIN VIEW, CALIF.— Unable to make a go of it as a provider of security monitoring services, privately held Securify is looking to sell security hardware and software for customers to use on their own.

The company, founded four years ago by encryption expert Taher Elgamal, calls its appliance SecurVantage. The device records application and network use, and includes a management console to provide reporting and analysis based on a customer's security policy for authorized application use.

SecurVantage, which is based on a Dell server with a hardened Linux kernel, connects to a LAN switch at up to 1G bit/sec.

Chicago law firm Sonnenschein, Nath & Rosenthal, an early adopter, is finding SecurVantage to be a useful tool for refining its security policy. The device lets the company know how business activities are affected as new security policies are introduced and enforced.

"There's authorized traffic and unauthorized traffic, and SecurVantage can categorize it by scoring it high or low, or red, green and yellow," says Adam Hansen, lead information security engineer at Sonnenschein, a 1,500-employee firm with offices around the country. "You can develop a policy for what each SecurVantage sensor sees. It sorts application use by protocol. I even can look at commands passed to a Web server."

Sonnenschein has been running three SecurVantage sensors for about a month on its office LAN, with the main benefit being its ability to obtain a view of the law firm's typical intranet and Internet use. Hansen says he anticipates more widespread use of SecurVantage at the firm.

Few products seek to do exactly what SecurVantage tries to do, although start-up nCircle is also looking to provide a comprehensive security view. Most intrusion-detection systems seek to detect outright attacks. Another category of products, network discovery tools, can be useful for watching traffic flows, but they don't usually work in real time the way SecurVantage does, Hansen says.

Pricing for SecurVantage starts at $50,000. ■

Security
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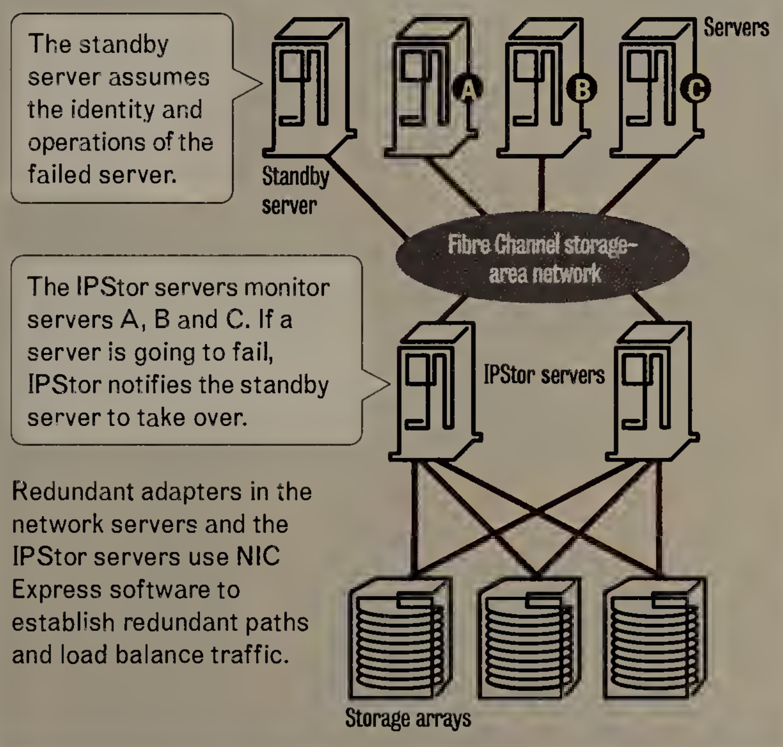
FalconStor boosts storage back-up system

■ **BY DENI CONNOR**

Bases covered

FalconStor's IPStor network is fault-tolerant on both the server and network side.



The standby server assumes the identity and operations of the failed server.

The IPStor servers monitor servers A, B and C. If a server is going to fail, IPStor notifies the standby server to take over.

Redundant adapters in the network servers and the IPStor servers use NIC Express software to establish redundant paths and load balance traffic.

MELVILLE, N.Y. — Storage software vendor FalconStor last week moved to improve the fault tolerance of its products by acquiring software maker IP Metrics and revealing plans to add server failover capability to its own IPStor product.

FalconStor will add IP Metrics' NIC Express to its lineup of data pooling software. NIC Express creates redundant data paths between network servers and workstations, and reroutes network traffic, ensuring business continuity if a network adapter fails.

FalconStor paid $2.5 million cash for IP Metrics.

FalconStor's IPStor product combines network-attached and storage-area network (SAN) data into a common pool of information that can be shared by users and managed from one interface. It consists of software installed on a server that is positioned in the data path between network servers and the storage devices.

Because the IPStor server handles all the data flowing between servers and storage devices, it is critical that it be mirrored with another server for redundancy, analysts say.

"Putting a single point of failure into a big network is entirely illogical," says Steve Duplessie, senior analyst for Enterprise Storage Group. "The success that companies such as FalconStor and Datacore have had is pretty impressive, but the smart implementations always have at least two appliances for fault tolerance.

To alleviate this concern, FalconStor has added mirroring, replication and snapshot back-up capability to its products. A function called SerVivor, which FalconStor will release this fall, lets a standby server take over the operations of any of the primary servers if they fail.

With SerVivor, an agent is installed on the server designated as the standby server. The IPStor server monitors the other servers and if one fails, it signals the standby server to take over the failed server's storage. The standby server effectively takes over the workload of the failed machine, ensuring constant uptime.

Steve Kedem, senior network engineer with law firm Weil, Gotshal & Manges in New York, uses IPStor to connect Hitachi, Compaq and MTI disk drives to Compaq servers. He has created a redundant network with Brocade switches, dual host bus adapters and IPStor servers.

"We have dual redundant paths to each IPStor server," Kedem says. "If a server can't get to the storage because an IPStor server failed, then no matter how redundant the rest of the system is, we have no assurance we could get to data."

Kedem also has tested SerVivor.

"If we have four identical servers each with different operating systems — they could be NetWare, Windows NT, Linux or Solaris — the IPStor servers will listen to the servers and if they realize that Server A has failed, they will tell Server B to boot itself from the SAN," Kedem says. "We can effectively cluster across different operating systems and applications and protect our data."

FalconStor declined to comment on the price or availability of the SerVivor option.

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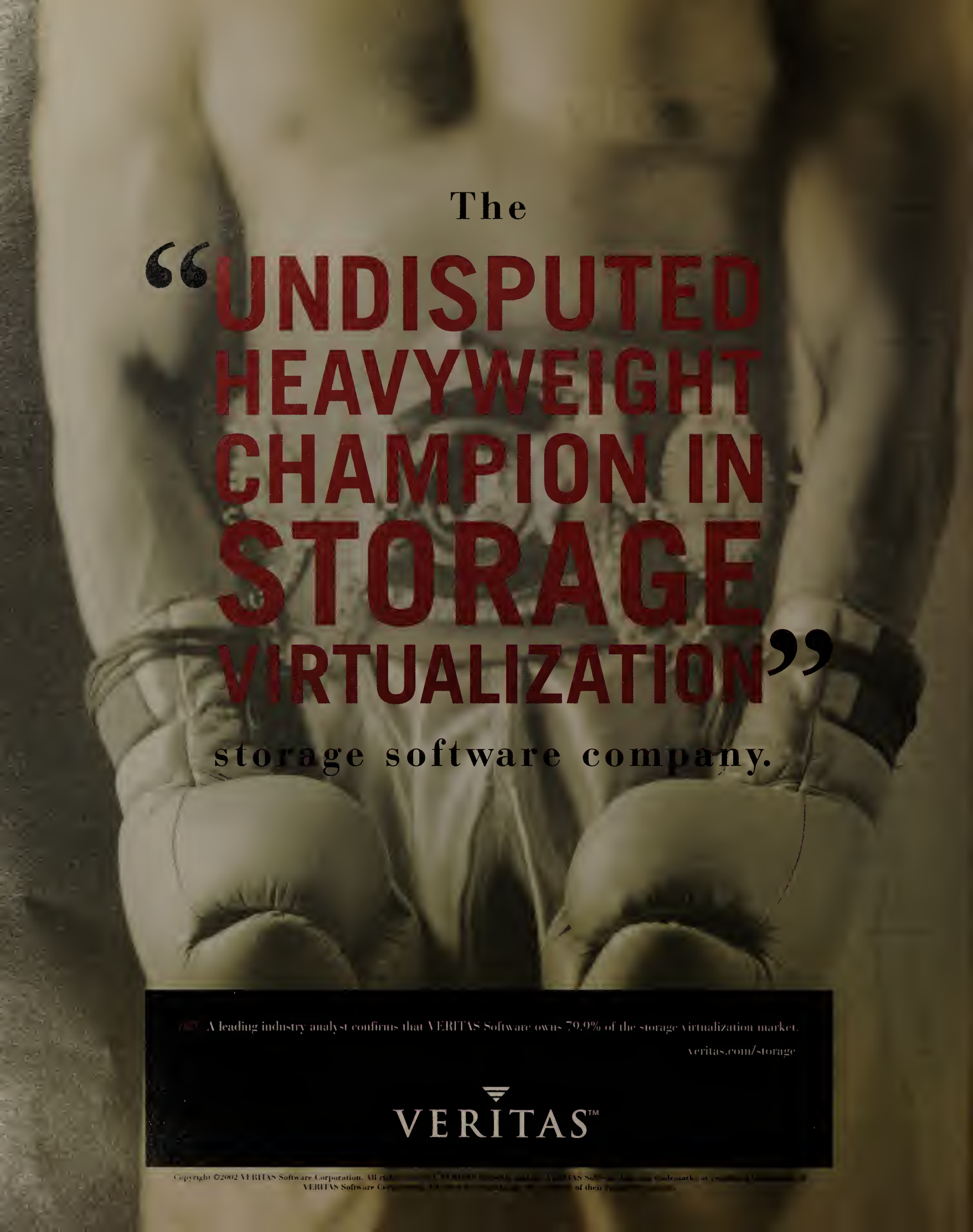

A leading industry analyst confirms that VERITAS Software owns 79.9% of the storage virtualization market.

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Infrastructure

- TCP/IP, LAN/WAN SWITCHES
- ROUTERS ■ HUBS
- ACCESS DEVICES ■ CLIENTS
- SERVERS ■ OPERATING SYSTEMS
- VPNS ■ NETWORKED STORAGE

Short Takes

■ **Unisys** last week added two new lines to its ES7000 server series — the Orion and the Aries — which run Intel's new 64-bit Itanium 2 processor. The company will try to dent the Unix-controlled high-end server market and convince companies to consolidate their server rooms with the new machines. The **ES7000 Aries 130** and the **ES7000 Orion 130** will come with 900-MHz or 1-GHz Itanium 2 processors, and up to 64G bytes of memory. Users also can choose the ES7000 Aries 230 or ES7000 Orion 230 with Intel's Xeon MP processors, at either 1.4 GHz or 1.6 GHz. The Orion line offers high performance and scalability for a lower price than similar Unix systems, Unisys says. Up to 32 Itanium or Xeon processors, which can be split into two independent 16-processor domains, can be included in the Orion series. The servers will cost from $140,000 to $700,000, depending on the configuration. The Aries line will be marketed as an entry-level box. It features up to 16 Itanium 2 or Xeon MP processors, and will cost between $75,000 and $300,000, depending on the configuration. All four servers will come with Microsoft's Windows Advanced Server Limited Edition, which can be upgraded to Windows .Net Server when that comes out later this year. The availability of the Itanium servers will be delayed until September to be closer to the release date of .Net Server, Unisys says. The Xeon servers are available now.

■ **Storability** sold its services business to **Storagetek** last week. The business, which consisted of the AssuredStorage Operations Center and licenses for software technology associated with delivery of remote storage management and administration services, had sustained the company since its founding in May 2000. Recently, Storability refocused its company and announced that it would sell its storage-area management software called **Global Storage Manager** to enterprise customers. www.storability.com

VMware pumps up server partitioning software

■ **BY ASHLEE VANCE**

PALO ALTO — VMware recently announced the newest version of its GSX Server partitioning software, touting support for a host of new operating systems along with added management tools for users.

The product lets customers install many operating systems on one Intel-based server, making it possible for them to host several applications on one physical system and potentially save money on hardware costs.

GSX Server 2.0 lets users run the latest versions of Windows and of various Linux distributions. It also includes new APIs for writing Component Object Model (COM) and Perl scripts that let users add more complex management features to the partitioning software, says Kevin Epstein, director of product management for GSX Server.

Unlike VMware's higher-end ESX Server software, which is targeted at data-center server consolidation, GSX Server was built to help companies design, test and roll out new software applications. GSX Server lets a company test applications on many operating systems, but using only one physical server. Companies also can transfer an entire virtual machine or image of the operating system and its applications from server to server, Epstein says.

"The product helps transform the software life cycle in terms of time as well as approach," Epstein says. "Companies often do application installs and discover missing files or subtle differences in hardware that cause time lags and hassles. With GSX Server, administrators are literally able to take up fully encapsulated virtual machines as files. They can pick up the file and FTP it over to a deployment server and start it running."

With the new release, VMware has added support for Microsoft's upcoming Windows .Net Server, Standard Server and Enterprise Server as both the host — or main — operating system, and guest operating system. Linux distributions MandrakeSoft SA 8.2, Red Hat 7.3 and SuSE Linux AG 8.0 also will work as a host or guest operating system.

VMware also added a complete set of COM and Perl application programming interfaces for running secure remote access and automation functions with virtual machines. The amount of memory that can be added to the server hardware and host operating system using the physical address extension standard also has been upped with the new release, to 8G bytes.

One customer using GSX Server to consolidate applications onto one server and as a test environment was pleased to see the additional management tools.

See VMware, page 22

More online!

Learn about the partnership between VMware and IBM.

DocFinder: 1326

Server deluxe

The latest release of VMware's GSX Server partitioning software promises to deliver a number of system and cost-saving benefits, among them:

- Consolidate applications and infrastructure services onto fewer highly scalable, highly reliable enterprise-class servers.
- Simplified system management.

- Let's users develop in multiple machine environments and clusters, rapidly build realistic tests in less time and with less hardware, and automate management of machines and machine images.
- Shorter development cycles and compressed set-up time for complex testing projects.
- Lower hardware costs.

SonicWall VPN router backs up dedicated links

Device protects teleworkers if main 'Net connection fails.

■ **BY TIM GREENE**

SUNNYVALE, CALIF. — SonicWall is introducing a small-office VPN router that preserves telecommuters' connectivity to corporate networks if their dedicated Internet connections fail.

Tele3 SmartPath backs up dedicated Internet connections such as DSL or cable modems with dial-up connections. The device automatically dials out to a designated ISP via a built-in modem, reestablishing the lost VPN tunnel.

Other vendors offer dial back-up options, but they do not have appliances with built-in modems, says Charles Kolodgy, research manager for Internet security at IDC.

When the modem picks up for a failed dedicated link, Tele3 SmartPath monitors the downed line and when it comes back up, switches traffic back to the faster connection.

Other home-office devices cost $300, but the Tele3 SmartPath costs $650, Kolodgy says. But unlike the less-expensive competitors, the SonicWall product comes with enterprise-level management through SonicWall's Global Management System software, he says.

It would be useful in retail stores that use an Internet-based VPN to send sales and inventory data to a central site, or connect to credit card verification ser-

See SonicWall, page 22

Meltdown's silver lining: Exasperated innovation

TOLLY ON TECHNOLOGY

Kevin Tolly

The tech meltdown has been kind to nobody. Certainly, the abruptness made it enormously painful. Yet the situation has served as a catalyst for a profound change throughout the industry. Ultimately, it will yield innovation that otherwise would not have taken place.

Let's face it, before the bubble burst, what I'll call "complacent arrogance" was rampant in the network industry. Share prices were soaring, and IPOs became almost like carnivals.

I still remember the day that Foundry Networks went public in September 1999. I was on stage in Washington, D.C., moderating our *Network World* State of the LAN Town Meeting tour. Along with me were speakers from Foundry, Extreme Networks and Alcatel.

Being in the same time zone as Wall Street, the markets were opening as we commenced. At first, I couldn't understand why the speakers were getting up and down from their seats. It became apparent to everyone in the room when one of our speakers forgot to turn off his wireless microphone when he left the room to call his broker. Foundry's competitor (who shall remain nameless) was busily buying first-day shares. And I later found out that he wasn't the only vendor on stage doing so.

To me, this scene epitomized the focus on the "game" rather than the product.

Companies would come into being without ever being concerned about actually bringing out a product. They simply wanted to become "bait" for a serial acquirer such as Cisco, Nortel or Alcatel. As we all came to find out, it was all about "valuation" rather than "value."

For employees with entrepreneurial yearnings, the sky-high stock price was a strong disincentive to striking out on one's own. Some workers simply rode the red-hot job market and job-hopped their way to top-dollar positions.

That's all over now — and good riddance. The job-hoppers have certainly had their comeuppance. Many who gravitated toward IT because it was "easy money" have left the field. They won't be missed. More importantly, the fires burning in corporate America have released the seeds of innovation once again. Exasperated with the moribund state of giant employers, the would-be entrepreneurs have seized the moment.

It seems like every day we are getting contacted by "stealth-mode" or alpha-phase start-ups. They are acutely attuned to today's market conditions. They have a laser focus on creating and proving value. And, most importantly, they are committed to going all the way — delivering a product to market and generating a profit. What a concept.

During the past few years, there were a lot of areas that were overlooked as the industry rolled ahead at 90 mph looking for the next big thing. Why refine existing technology, vendors would say, if it is merely going to be swapped out for the "latest and greatest."

With network executives now making it clear that the days of infrastructure "churn" are over, the stage is set for a slew of "refinement" products. That, combined with a surge in interest in security, should set the stage for start-ups and established firms to focus finally on managing and optimizing existing gear. IT buyers will benefit from higher reliability and lower total cost of ownership.

Of course, even great ideas have a hard time finding funding today but, from my vantage point at least, I'm bullish as I see the highest level of innovation — albeit triggered by exasperation — that I've seen in a decade.

Tolly is president of The Tolly Group, a strategic consulting and independent testing company in Manasquan, N.J. He can be reached at ktolly@tolly.com.

Asanté offers fiber-based LAN gear

■ BY PHIL HOCHMUTH

SAN JOSE — Asanté recently updated its line fiber-based Fast and Gigabit Ethernet gear with several new switch, network interface card and media conversion products aimed at small businesses looking to bolster their networks with fiber-optic cabling infrastructures.

The FriendlyNET FX4000 and 4008 switches could help users with smaller networks expand their network backbones by providing up to 32 or 64 fiber-based ports of Fast or Gigabit Ethernet. A new line of eight-, 16-, and 24-port workgroup switches and a single-mode fiber NIC are on tap for connecting end users. New media converters for changing copper Ethernet connections to fiber for long-distance connections also were released.

The FriendlyNET FX 4000 is a four-slot chassis that can house 32 10/100Base-T, 100Base-FX or 1000Base-FX/LX ports, or a mixture of the three types. The 4008 model chassis comes with eight slots and supports 64 total ports. Multimode Fast and Gigabit Ethernet modules come with four ports, while single-mode blades have two ports.

FriendlyNET FX1009, FX1017 and FX1024 series workgroup switches come with eight, 16 or 24 ports, respectively. Each box also can accept one 100Base-FX/LX fiber uplink module.

For converting copper-based network connections to fiber, Asanté's FriendlyNET FC converters are now available. The converters can extend a copper-based Gigabit Ethernet connection, which have a distance limitation of 300 feet, 37 miles with a single-mode fiber converter. Converters for 100Base-T to 100Base-FX/LX are available, and converters that can connect multimode to single-mode fiber links. Asanté also released a 1000Base-FX NIC for connecting Windows, Macintosh and Linux/Unix workstations and servers with multimode fiber Fast Ethernet.

The FriendlyNET FX4000 chassis will compete with similar small-chassis products such as 3Com's Switch 4005 and Hewlett-Packard's ProCurve 4000 series chassis.

FriendlyNET FX4000 and 4008 series chassis at $280, and the FriendlyNET FX1000 series workgroup switches start at $330. The FC Series Media Converters start at $120, and the GigaNIX 1000SX adapter goes for $600. All products are available now.

Asanté: www.asante.com

SonicWall

continued from page 21

vices, Kolodgy says.

Michael Relich, CIO for the Foothill Ranch, Calif., women's clothing chain Wet Seal, hopes to start rolling out the Tele3 SmartPath in the company's 567 stores soon. The firm uses a dial-up remote-access VPN to move sales data, push out new pricing lists and update point-of-sale software. But he wanted more speed and a persistent Internet connection "We wanted to move to DSL, but we also want dial back-up," Relich says.

The company is dumping a Check Point Software-based VPN in favor of the SonicWall gear, and Relich says he thinks the appliance is more stable and easier to manage. DSL service won't be available at all stores initially, but because of the dial option, he can roll out the same gear in all stores right away using dial connections if DSL is unavailable. That way, all stores will have a standard set of equipment regardless of the service. As DSL becomes available, he can switch over the installed Tele3 SmartPaths.

Using the SonicWall appliance also will get the Check Point VPN client software off the lead PC/cash register in each store, which he says he thinks might make the registers more stable.

In addition to supporting IP Security VPNs and a firewall, the Tele3 SmartPath appliances also can support URL filtering and virus screening.

SonicWall: www.sonicwall.com /products

VMware

continued from page 21

"I've tested the 2.0 beta and am much more comfortable with the remote console," says Michael Rice, vice president of technology and operations at Tower Bank and Trust in Fort Wayne, Ind.

In GSX Server 2.0, users can set up scripts to automate functions such as checking on a virtual machine's health remotely and to restart a virtual machine if it goes down.

Rice purchased a dual-processor 1-GHz Pentium III server to make sure he had enough horsepower to handle several applications on a system at once. He runs a database and an automation server that manages various functions within the bank on the one server. "I bought a state-of-the-art server now, knowing that I will save money easily in the long run," Rice says. "I don't have to go out and buy separate servers now, which is a huge plus."

Rice also runs a test environment with GSX Server for other applications. He uses Windows 2000 and NT but might move to Linux down the road to offset some licensing costs, he says. "Customers are clamoring for Microsoft relief," he says.

One analyst added that VMware has formed close ties with hardware vendors such as IBM and Hewlett-Packard, which should create better links between their servers and the partitioning software.

"What's more important than the raw technology in some ways is that VMware has done a very good job of creating tight relationships with the vendors," says Tom Bittman, an analyst at Gartner.

IBM and VMware have a development agreement to add partitioning capabilities to IBM's Intel-based servers. This gives IBM's Intel line similar high-end features as its mainframe and Unix systems. The companies have developed a version of the software for IBM's x360 server and plan an update to the software for the third quarter that will be aimed at the high end of the xSeries line.

Putting more applications on one physical server can help lower the total number of servers a company needs to manage. A software bug or virus can be isolated in one partition without affecting other software on the server.

"With ESX Server, users can chop up a 16-processor server into 20 different partitions or virtual servers. Administrators can then run different applications in each partition and allocate processing and memory resources for each application.

GSX Server 2.0 is available now for $3,500 per server via download or $3,550 for a boxed version.

Vance is a correspondent with the IDG News Service's San Francisco bureau.

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For a limited time with the purchase of a VPL-PX15 projector, you can receive a Wireless LAN Card at no additional charge. Call 1-800-766-9523 (Sony LCD) or visit www.sony.com/supersmart today for more information and program Terms and Conditions.

SuperSmart

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■ PRODUCTS, SERVICES AND STRATEGIES FOR TYING TELEWORKERS TO THE ENTERPRISE

Health First's Rx for telework

■ BY JEFF ZBAR

In 2000, Health First suffered from the low-tech blues.

Medical transcriptionists were in high demand, but finding qualified workers was nearly impossible. As a result, rival hospitals began paying transcriptionists top dollar and letting them work from home.

These specialized workers need not only to access the company network to retrieve documents, but they also need home-office phones that mimic the corporate phone system to ensure easy access by doctors and departments that need audio notes transcribed.

Executives at Health First, a three-hospital network in Viera, Fla., knew telework could keep them competitive, but they couldn't launch a significant telework program without an overhaul of the hospitals' communications systems.

"It became important to make similar offers and extend our systems beyond Brevard County," says Steven Shim, director of IT technical services.

PROFILE: HEALTH FIRST

Location:	Viera, Fla.
Business:	750-bed, three-hospital network.
Employess:	5,000
Teleworkers:	50; significant growth expected.
Challenge:	Tight office space and the inability to recruit qualified medical transcriptionists locally hindered the company's growth.
Solution:	Health First launched a telework initiative using a VPN and VoIP phone system to reproduce the office environment.

Breaking point

While some firms simply send workers home with an Internet connection and a phone line, others opt to replicate the corporate environment in the home. Although the latter is more costly, the benefits abound. Mirroring the office can make training new teleworkers easier, boost productivity of existing employees by giving them the tools to which they're accustomed. For technical workers specifically, replicating the office systems can speed downloads and processes.

As a workflow systems administrator at Health First, Desmond Almarales remembers the long hours he and his team of four database analysts and programmers used to put in installing software and system upgrades — tasks that involved multistep processes that can't be performed reliably over a dial-up connection.

"If they were home and a glitch would arise, they'd have to drive back to the office to solve it," Almarales says.

Moreover, because Health First had grown in recent years through acquisition of hospitals and other medical offices, the company had to deal with a variety of office spaces wired with disparate phone systems. Add to this the shortage of transcriptionists and IT's need to make workers more productive, and late in 2000, Health First executives decided they could wait no longer and gave the green light to the necessary upgrades.

Phones first

Shim and several other executives visited Siemens Enterprise Networks in Boca Raton, Fla., to see the company's new HiPath Communications Platform and its Optipoint desktop telephone, and in 2001 rolled out a small pilot program. The telephone network is an IP convergent system that connects remote workers' Siemens phones with the hospital telephone system via an Internet connection. This also lets transcriptionists who work long-distance from the company communicate without paying long-distance toll charges.

The HiPath phone delivers identical corporate office communications and functionality in the home office. Whether Almarales wants to dial an in-office colleague or a home-based one, he dials the worker's five-digit extension. The system also delivers centralized voice mail, automated attendant and conference calling features to all users across the network.

Shim says he put the transcriptionists on an automatic, call distribution list. When a department or doctor needs transcription service, the system sends the call to an available transcriptionist.

Since the pilot was completed last year, Health First has rolled it out to 50 transcriptionists and workers in finance, patient relations and IT. Next, the company plans to expand the program to include its call centers, the patient billing service, health insurance division and physician practices.

The Siemens software, loaded onto a Pentium II machine with dedicated broadband or dial-up Internet access and a Siemens analog to voice-over-IP gateway, costs about $2,000 per remote worker.

Data decisions

Upgrading the phone system was only half the job. Next, Health First teleworkers needed high-speed connections to access the corporate Novell network.

Health First worked with Time Warner Telecom to establish a DS-3 connection between its data center and Time Warner's Maitland, Fla., facility. This reduced the number of peering points and helped deliver a dedicated 45M bit/sec pipeline for Health First's remote workers.

The hospital chain also selected Novell BorderManager VPN, which delivers the same desktop to the home office that workers view in the corporate office. Its IP Security VPN application helped Health First comply with security requirements of the federal Health Care Financing Administration and Health Insurance Portability and Accountability Act.

Ensuring remote workers are on the same platform and using the same applications has created consistency between the corporate office and teleworkers' home offices. This has aided productivity and helped the company's IT support staff troubleshoot tech problems, Shim says.

"We needed consistency from the office to the home office: the same applications, login, application delivery, phones," he says. "Usually once you get away from the main facility, you lose all opportunity to do that. Now it's much like they're on the main network, and this is all transparent to all our customers."

For Almarales and his team, telework has been a boon to productivity. During a monthlong upgrade to People Soft 8.0 earlier this year, his team members — who all work from home full time now — performed upgrades and adjustments and relaunched the system from their homes. ■

Health smarts

In shopping for a new communications system, Health First executives sought technology that accommodates in-office and remote workers. Here's what they learned:

- **Identical systems shorten learning curve.** Choosing products that work well in both environments lets Health First train teleworkers in the corporate office, then send them home to work using the same set up.
- **Seamless systems ease in-office workers' adjustment.** Because in-office employees use the same dialing and e-mail protocols for internal and home-based workers, they found it easy to adjust to working with new teleworkers.
- **Plan for the future.** The best time to research new telephony or computer hardware or software systems is before you need one. This helps ensure you'll select equipment that is unified across the company.

Short Takes

■ Rivals **Intellon** and **Cogency Semiconductor** recently announced additions to their HomePlug-compliant chip offerings. HomePlug lets users share Internet access via existing power lines to network home office and eventually entertainment devices at 14M bit/sec. The companies both tout an integrated circuit design, which lowers the cost of materials and could help spur market adoption. (Intellon says its new chip makes powerline products cheaper to build than wireless.) The Cogency CS1102 chip powers an Ethernet to HomePlug bridge device; the Intellon INT51X1 chip powers an Ethernet to USB device. **www.intellon.com; www.cogency.com**

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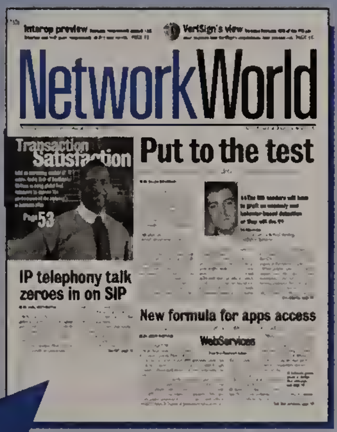

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Users, vendors try to manage Web services

■ **BY DENISE DUBIE**

Travel industry giant Orbitz couldn't wait for management software vendors to offer the tools it needed to track how integrated applications performed under pressure. So the online travel company built its own.

"We needed to figure out how to manage all of the many devices and elements and integrate them into one kind of view of operations," says Kevin Malover, Orbitz CIO. He says the Chicago company that searches about 450 airlines to find the lowest airfares for customers needed to ensure "all of the moving parts" worked together smoothly for a more-than-satisfactory end-user experience.

For Orbitz, the high volume of online transactions required the company jump a bit ahead of network management vendors and write its own software to manage the performance of its Web service applications, which include booking airline tickets, via the Web. When a customer visits the Orbitz Web site, he triggers a process that involves Orbitz getting the user request, searching numerous databases, delivering travel options, tweaking the details, handling credit card authorization, confirming accounts and so on.

Unfortunately for Orbitz — and despite a lot of recent talk from management software companies — industry watchers say most vendors can not yet manage Web services, or the technology that uses XML interfaces to let applications talk to each other and potentially work as one business application or process. For Orbitz and the billions of transactions the site processes per second, all those moving parts pose problems for traditional management tools.

"Travel is not static. The inventory changes every second, and these transactions are fairly complex," Malover says.

Several vendors can manage the performance, including metrics such as response time, availability and accuracy, on an individual application, server or device fulfilling a user request. But tracking each transaction in a process that involves several pieces of software working together and then relating how the performance of one step can or will affect the next step in the process remains a challenge for most management software.

Although Orbitz uses Micromuse's Netcool network management software to detect faults, Malover says the company designed its own application that would alert network operations staff to application behavior and online service abnormalities.

"We built alarming into our application layer not to tell whether there is a terrible event happening on a server, but to see how the application is behaving, how well applications are working together and what's happening when a customer visits our site," Malover says.

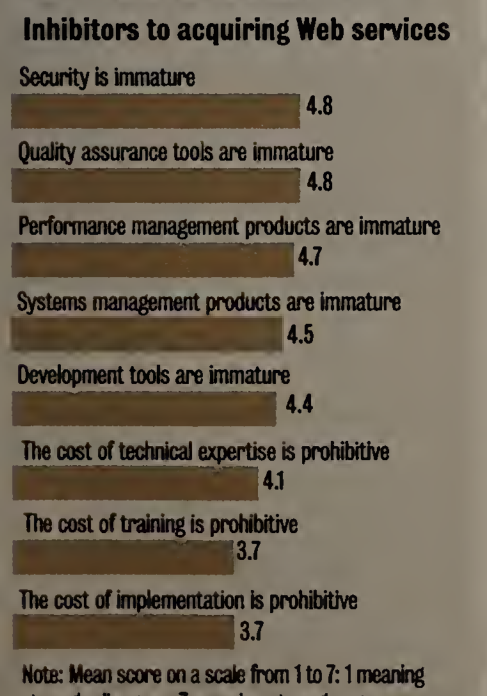
Making the various networks, systems and databases work together requires a high level of integration between multiple applications and creates a lot of room for performance problems. "It's more about flagging a wacky response from an application than looking for failures," Malover says.

In fact, users asked about the main inhibitors to Web services adoption said they found performance management products to be too immature, among other issues. And while security topped the list of user worries about implementing Web ser-

See Web services, page 28

Holding back

In a survey of more than 300 enterprise companies, users said Immature quality assurance, performance and systems management tools would keep them from adopting Web services.



Note: Mean score on a scale from 1 to 7: 1 meaning strongly disagree; 7 meaning strongly agree.

SOURCE HURWITZ GROUP PRO STUDY, JANUARY 2002

Shavlik taking patch mgmt. further

■ **BY JOHN FONTANA**

Shavlik Technologies this week will update its popular Windows-based patch management tool to provide network executives with support for Microsoft server applications that the company's software can patch automatically.

Version 3.8 of Shavlik's HFNetChkPro, which previously was focused on the operating system, now will collect and install patches and service packs for Microsoft Exchange Server 5.5 and 2000 and SQL Server 7.0 and 2000. The company also is adding support for Internet Explorer, Terminal Server and Windows Media Player.

Support for additional Microsoft platforms signals that Shavlik is trying to appeal to larger corporations that need patch management tools that go beyond just the operating system, which previously was Shavlik's limitation. Shavlik is working on adapting a future release of its product with support for non-Microsoft platforms.

Microsoft licenses a subset of Shavlik's technology for use with its free HFNetChk and Microsoft Baseline Security Analyzer tools.

The issue of patch management, especially on the Microsoft platform, is fast becoming a major sore spot with network executives and a financial nightmare.

Worldwide, corporations spend in excess of $2 billion annually to investigate, prioritize and deploy patches to erase security vulnerabilities, according to a recent study by Aberdeen Group.

In addition to support for Exchange and SQL Server, Shavlik has added an XML-based database that supplies the procedures to properly install a patch or service pack.

While the installation of patches is automatic, Shavlik alerts administrators if they have to do something manually to guarantee the patch gets installed.

"People are starting to figure out how much time and effort they spend on patch management," says Eric Hemmendinger, research director for security and privacy with Aberdeen Group. "It's a huge expense, and now they have to figure out how to deal with the problem."

Shavlik competes with the likes of Loudcloud, BigFix, St. Bernard Software, ConfigureSoft, Ecora, Aelita and Patchlink.

Another major feature of HFNetChkPro 3.8 is its Download Center, which ensures the software has the latest patches from Microsoft and that they are available immediately.

HFNetChkPro 3.8 is available now and costs $1,123 for use on up to 50 machines.

Small businesses are being offered a 25% discount. ■

Short Takes

■ **CommerceOne** last week detailed its overhauled software, now called **Collaborative Web Services Platform.** Due out early next year, CWSP will combine tools for connecting existing applications, defining workflow and composing new applications. It is aimed at letting customers make better use of data contained in legacy applications and deliver new applications as Web services. The company says the software is based on two of its existing products: **MarketSite,** an XML based infrastructure for connecting trading partners' applications; and **Active Market,** which is based on business process management and application composition features CommerceOne gained in its 2001 acquisition of software vendor **Exterprise.** The platform will feature built-in support for Web services standards, including Universal Description, Discovery and Integration. Pricing is not yet available.

You do not have to lose money

'NET INSIDER

Scott Bradner

Just when the telecom end-of-world experience seems to be ratcheting up to yet another level of pain comes word that the Internet is not the guaranteed way to lose money that most people thought. It is actually possible for something other than eBay and pornography to make money on the 'Net.

A common request in business classes over the past few years has been "show me the business case where someone makes a profit with an Internet-based service." After pornography and eBay, people quickly ran out of examples.

A lot of companies have saved gobs of money by using the Internet for customer interaction. Cisco saved billions of dollars by moving to Web-based sales and support. Another example is the U.S. government — it costs fractions of a cent to deliver a tax form via the 'Net vs. multiple dollars to deliver the same form via postal mail.

But the examples of businesses actually selling something over the 'Net and making money have been few indeed. The images of the Pets.com sock puppet and many other ex-Super Bowl advertisers (and existing companies) predominate.

But now comes news that profits are becoming more common. *Business Week* reports that 52 of the roughly 200 public Internet companies that made it through the industry bust are currently profitable and 15 to 20 more may become so next year. (*Business Week* carefully says these companies are profitable "under standard accounting rules," whatever that means.)

Even Yahoo just reported that it made $21 million on revenue of $226 million in the last quarter. The four profitable companies that made *Business Week's* InfoTech 100 list in June made a total of almost $100 million in the first quarter. The companies on the list were pure service companies — eBay, two travel sites and a search engine.

In the grand scheme of things, that may not be that much money compared with the $6 billion Microsoft made last year, but it's also a far cry from the billions of dollars lost during the past few years. And the trend is in the right direction. As *Business Week* points out, these types of service companies can support a significant increase in sales without a big increase in costs because their infrastructures are already in place.

Maybe it was always the case that even in the Internet well-executed good ideas would succeed and that fact was just hidden in the burst of high-profile boutique concepts such as Pets.com. But it is ironic that logic should wait until the free fall in the stock market to win out.

Disclaimer: The problem with logic at Harvard is that there is not just one set. But the above observation is my own, in any case.

Bradner is a consultant with Harvard University's University Information Systems. He can be reached sob@sobco.com.

Web services

continued from page 27

vices, reliability and interoperability came in second and third, respectively, in an Evans Data survey of 400 enterprise development managers.

As for the security concerns, standards groups are debating where and how to incorporate security into future standards such as WS-Security and WS-Routing. And the Organization for the Advancement of Structured Information Standards is developing ebXML, which includes models for security and standardizing electronic business processes (see www.nwfusion.com, Doc Finder: 1324).

While many seem to accept that security concerns need more attention, many management vendors say their software can address user concerns about performance, reliability and interoperability by managing network, systems and application performance and availability.

Right now there are few network, systems and applications management software vendors that say they can detect inaccurate application response and incorrect content delivery. Smaller vendors such as TeaLeaf Technology and Webhancer say they can measure Web application performance from an end-user perspective and let network operations know when inaccurate content is delivered. And while not making that claim, big framework vendors say they too can manage multiple applications as a service being deployed by enterprise companies today.

Heavyweight network management contenders Computer Associates, IBM/Tivoli Systems and Hewlett-Packard detailed this spring how their software can manage multiple applications integrated to deliver one service and manage how well those applications work together.

Part of the problem in managing multiple elements as one is the nature of network management software. Most tools require server software installed at a central location, while software agents reside on the device to be managed. Because the idea of Web services would let applications across the Internet dynamically talk to each other, placing agents to collect performance data at every hop along the way represents a challenge.

Size matters

About 40% of companies with 25,000 or more employees have adopted Web services technology and have already implemented solutions. Another 49% of those companies are currently deploying and/or experimenting with the technology.

SOURCE: HURWITZ GROUP PRO STUDY, JANUARY 2002

Using standards and protocols to integrate applications on an intranet poses less of a management issue because all the elements of the service reside within the corporate firewall. Companies such as BMC Software and Aprisma say their application management software can manage processes that tap multiple resources within a firewall.

When deploying Web services via an extranet, or shared Web site with a specific business partner, companies can use dedicated VPN lines and other means of securing the connection and creating a path for the components to work together. Using industry protocols and standards lets the disparate applications communicate, but also gives management software the ability to get in on the conversation.

CA incorporated support for XML, Simple Object Access Protocol (SOAP), Universal Description, Discovery and Integration (UDDI) and Web Services Definition Language (WSDL) protocols into its CleverPath portal software in April. The company says the protocol support lets the portal software understand the application trying to connect to it.

Tivoli and HP were among the companies that added support for Sun's Java 2 Platform Enterprise Edition and Microsoft's .Net application development environments in anticipation of managing applications developed specifically with XML, UDDI, SOAP and WSDL integration in mind. NetIQ also intends to put its AppManager suite of software to use when enterprise companies embrace the new technologies.

But industry watchers say it's too soon to determine if these packages truly can manage complicated transactions and integrated applications across network domains because Web services technology has not yet seen widespread adoption by enterprise companies. ■

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DocFinder: 1327

Microsoft talks up CRM

■ **BY ANN BEDNARZ**

Small businesses looking to buy sales and customer service software soon will find a familiar vendor vying for their dollars: Microsoft.

The company recently previewed its Web-based CRM application called Microsoft CRM and aimed at small to midsize businesses.

Large companies can buy best-of-breed CRM products and customize them, but smaller businesses don't have the IT resources to do that, says David Thacher, general manager of CRM at Microsoft, who previewed the CRM software at the company's Mountain View, Calif., campus. "They need something that's out of the box," he says.

Although a late entrant in the CRM market, Microsoft has brand recognition on its side. The majority of small businesses are Microsoft users, says Joe Outlaw, a research director at Gartner. They own SQL Server databases and are comfortable with the look and feel of Outlook, he says.

Due out in the fourth quarter, Microsoft CRM will be the first business application built on .Net. It's designed to allow integration with third parties' external Web services, such as credit checking, analytics and marketing automation services, the company says.

Users will access the software through Outlook or via a Web browser. Initially, the software will be compatible with Microsoft's desktop applications and its back-office offerings, which include financials, manufacturing and supply-chain management software for midsize companies. In the future, Microsoft CRM will be integrated with Navision Attain and Axapta — products gained through Microsoft's purchase of Danish software company Navision Software, which was completed this month.

Microsoft has stressed that it does not intend to compete with higher-end CRM vendors such as Siebel Systems (whose software is resold by Microsoft's Great Plains division), Onyx Software and Pivotal.

Products that will directly compete with Microsoft CRM include FrontRange Solutions' GoldMine, Interact Commerce's SalesLogix, Multiactive Software's Maximizer Enterprise and subscription-based CRM services from companies such as UpShot.

Microsoft CRM will require Windows 2000 or NT server software and Microsoft SQL Server 2000. Exchange and Active Directory will be required to use the e-mail and messaging functions built into Microsoft CRM, Thacher says. In its first release, Microsoft CRM will not be integrated with Lotus Notes.

The software will be available for on-site deployment or as a hosted service. Pricing ranges from $395 per user plus $995 for the server for the standard version, to $1,395 per user plus $1,990 for the server for the professional version.

Matt Berger, a correspondent with the IDG News Service's San Francisco bureau, contributed to this story.

Service Providers

■ THE INTERNET ■ EXTRANETS ■ INTEREXCHANGE AND LOCAL CARRIERS
■ WIRELESS ■ REGULATORY AFFAIRS

Internet2 gaining 'sponsored' users

■ **BY JENNIFER MEARS**

TROY, N.Y. — High-speed nationwide Internet2, which runs parallel to the Internet to give research universities uncluttered access to bandwidth-gobbling applications and technologies, is opening its doors a little wider.

During the past year, Internet2 has welcomed users to its network, thanks to a program called Sponsored Education Group Participation (SEGP). States that institute SEGP open their links into Internet2 to schools, libraries, hospitals, cultural organizations and research companies in their area that need access to the high-speed network for data-heavy applications and collaborative projects. Organizations that wish to tap into the network through SEGP must be sponsored by an Internet2 member.

In the past, smaller users such as K-12 schools and hospitals could not afford the cost of hooking into the Internet2 backbone. With SEGP, Internet2 is made affordable because the cost of hooking into the network is distributed across the SEGP participants. The cost structure is complicated, however, and each state's fees are different. Jim Brennan, director of external programs at New York State Education and Research Network (NYSERNet), which recently opened its regional network to the SEGP program, says users in New York will pay fees ranging from $25,000 to $125,000 per year.

Gary Bachula, vice president for external relations at Internet2, says he expected about 10 to 15 states to join the SEGP program in the first couple of years. Already, about 24 states have joined the program and more are expected to follow soon. "The response has been dramatic," he says.

Internet2 is actually the name of the nonprofit consortium led by 190 top research universities that are working with industry and government to develop and deploy advanced network applications and technologies to boost the performance of the "next-generation" Internet. The network consists of a national backbone, which peers with networks being run globally by organizations similar to Internet2.

The fastest path

The New York State Education and Research Network is leading the way in opening access to Internet2, a high-speed alternative to the Internet. Here are some facts about Internet2:

- It was launched in 1996 by the university community.
- It is a nonprofit consortium led by more than 190 universities working in conjunction with government and industry, including corporations such as Microsoft and IBM.
- Its backbone is called Abilene, a fiber-optic network donated by Qwest that links the top research universities in 50 states.
- The Abilene backbone operates at 2.4G bit/sec (OC-48), but is being upgraded to 10G bit/sec (OC-192).

Internet2's national backbone is called Abilene, a Qwest OC-48 (2.4G bit/sec) fiber-optic network. The network was developed through a collaboration of Cisco, Juniper Networks, Nortel and Qwest. The Abilene network operations center is located at Indiana University in Indianapolis.

Abilene connects regional network aggregation points, called gigaPoPs, which are managed by regional organizations such as NYSERNet.

Columbia University in New York is one of the founding members of NYSERNet and Internet2. Vace Kundakci, deputy vice president for academic information systems, says Columbia hooked into Internet2 initially for research purposes.

"But in general the way we did it was opening it up so that every user at the university would use it as long as the destination for that network traffic was another Internet2 institution. Even student e-mail from Columbia to Stanford goes over Internet2," he says. "So we benefit from having an almost private network dedicated for educational and research use."

Internet2 is especially useful for video applications, Kundakci says. For example, a conductor in Oklahoma, or even Canada, can conduct a master's music class at the Columbia campus via video over the Internet2 network. Other applications being deployed on Internet2 include multinational research on high-energy physics, astronomy work, weather forecasting and healthcare information sharing. Corporations including Fujitsu Labs, IBM, Pfizer and Johnson & Johnson also connect to Internet2.

Kundakci says he's happy to see Internet2 opening the network to more organizations. "It's very appropriate," he says. "The bandwidth is there." ■

Short Takes

■ The legal wrangling in the **content delivery market** shows no signs of letting up. Last week **Cable & Wireless,** which now owns Digital Island, filed a lawsuit against **Akamai Technologies.** The suit says Akamai's CDN products, including EdgeSuite and the Akamaizer tool that is used to prepare content for delivery on Akamai's network, are infringing on a patent that C&W was awarded July 2. Akamai denies the accusations. For its part, Akamai has sued **Digital Island** and CDN provider **Speedera Networks** for patent infringement. Earlier this month, a judge granted Akamai its motion for a permanent injunction to halt the operation of Digital Island's Footprint service. Digital Island claims the ruling is moot because it no longer uses the technology.

■ The **General Services Administration,** which handles federal government contracts, revealed earlier this month that it is **reviewing all the government's contracts with Qwest.** The Justice Department is investigating Qwest. The company also faces a Securities and Exchange Commission investigation into its accounting practices.

Sprint cuts back DSL offerings

■ **BY MICHAEL MARTIN**

Sprint's recent decision to discontinue much of its business-class DSL in 32 markets will mean fewer choices for companies hoping to deploy DSL to branch offices or remote workers.

"It really leaves AT&T and WorldCom as the only large providers still in that business," says Lisa Pierce, an analyst with Giga Information Group and a *Network World* columnist. "And if WorldCom leaves, then it's just AT&T and a number of smaller third-party providers."

The regional Bell operating companies — BellSouth, SBC Communications, Verizon and Qwest — are beginning to deploy more business-class DSL, Pierce says, but their concentration remains on the consumer DSL market.

Sprint is not leaving the DSL market altogether. The carrier will continue to offer business-class service through its local telecom division, which serves small cities. And it will continue to serve large business accounts through reseller agreements Sprint has with third-party providers such as Covad Communications.

The 32 affected markets were the beachheads for Sprint's now-canceled Integrated On-Demand Network (ION) service, which was designed to give users voice and data access over one high-speed connection. DSL was going to be one of the primary access methods for small businesses subscribing to ION. Even when ION was canceled last year, Sprint said it would continue to offer DSL services in the 32 ION markets where it had already installed DSL equipment.

But the cost of leasing space in incumbent local exchange carrier central offices and local loops made the business unprofitable, Sprint says.

Sprint will move as many customers as possible over to DSL service provided by its local telecom division. Customers who can't be reached by the local telecom unit will be moved to other connectivity services or to other providers.

The cuts to Sprint's DSL service were part of a reorganization plan that also included rolling Sprint's E-Business Solutions hosting group into Sprint's Business division and cutting about 1,200 positions as a result of the DSL and organizational changes. ■

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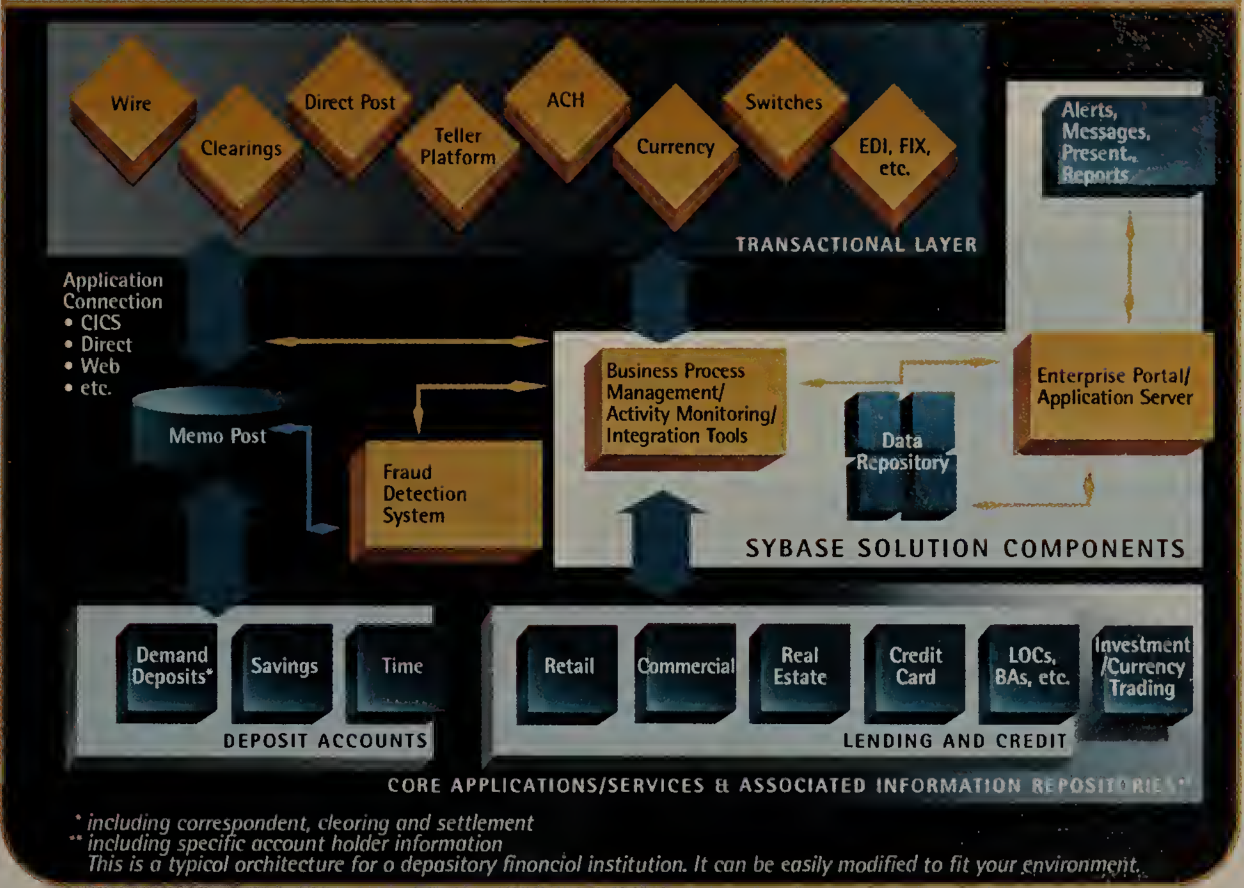

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BETTER WHEN EVERYTHING WORKS TOGETHER.™

EYE ON THE CARRIERS

Lisa Pierce

How WorldCom could set a good example

WorldCom's problems are only the most recent evidence of an industry in turmoil. There's also Qwest's alleged fraud; the bankruptcy filings of XO Communications, McLeodUSA, Adelphia Communications and Global Crossing; the fire sales of competitive local exchange carriers Winstar, Rhythms NetConnections and NorthPoint Communications; and the disappearance of companies that virtually had been household names, such as Excite.

Sixty-eight percent of the high-tech jobs lost in the first six months of this year were in telecom (both equipment vendors and service providers).

And these troubles aren't confined to the U.S., of course. For example, Deutsch Telekom, France Telecom and Orange are three large established European providers that face financial trouble.

In WorldCom's case, the rapid dismissal of CFO and board member Scott Sullivan and resignation of Comptroller David Meyers are moves in the right direction. However, to help salvage its future, CEO John Sidgmore must clean house of accomplices quickly, decisively and publicly, as he has pledged. Anything less could permanently cripple the carrier.

In addition to selling off certain assets, WorldCom has begun to furlough 20% of its workforce: 17,000 employees and contractors. This is in addition to the approximately 15,000 employees and contractors let go since early 2001. The planned appointment of a chief service and quality officer, whose mission is to watch customer service during the carrier's restructuring, is an important sign that Sidgmore appreciates the adverse effects that massive, abrupt downsizing typically has on customers. WorldCom customers have complained about such ill effects in the past.

Important follow-up information I'd like to see includes the amount of authority this position will possess (I hope, full officer-level line responsibility), and the background of the individual who fills the slot. WorldCom could send a strong signal to customers, employees, investors and creditors by naming an outside candidate who is well known for his or her objectivity and strong advocacy of customer interests. Other providers, even those in less turmoil, could serve their own and broader interests by creating similar positions and staffing them accordingly.

After CEO Bernard Ebbers resigned, WorldCom initiated an internal financial review and appointed a new auditing firm — again, an encouraging development. In fact, if to do nothing more than to help restore confidence in the individual carrier and broader industry, I think it is essential that every provider going through a change of senior management should follow suit. Furthermore, given the industry's depression-like slump, even providers with fairly stable senior management can and should help restore the industry, and their own financial standing, by doing the same.

WorldCom has not yet provided any indication of its willingness to look at its relationship with its board of directors, more than 70% of whom were appointed after the merger between WorldCom and MCI was finalized (post-Ebbers). To help restore customer and investor confidence, it should reconsider.

This recent news fuels the fires beneath the movement to overhaul Financial Accounting Standards Board guidelines and Securities and Exchange Commission regulations. The accountability of company officers also needs to be heightened using civil and criminal penalties. The relationship between companies and their auditing firms needs to be cleaned up, and board accountability to debtors and shareholders needs to be increased.

Given the range of industries that have admitted or are suspected of committing financial improprieties, I think service providers should proactively endorse and rapidly implement many of these efforts. Failure to do so will further erode customer and investor confidence, and will invite even greater regulatory scrutiny and proscriptions.

Pierce is a research fellow at Giga Information Group. She can be reached at lpierce@gigaweb.com.

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The Edge

■ SERVICE PROVIDER DEVELOPMENTS
AT THE JUNCTURE BETWEEN THE ENTERPRISE
AND THE NEW PUBLIC NETWORK

Laurel goes to the edge for fun

Start-up router maker shuns the core for more creative challenge.

■ **BY STEPHEN LAWSON**

PITTSBURGH — Atul Bansal says he didn't foresee the current slump in the service-provider core equipment business, nor the comparative strength of investment in gear for the network edge.

Bansal and five colleagues from FORE Systems who left the company in 1999 decided to develop an IP edge device simply because they thought it would be more interesting than a core product.

"There were different challenges at the core, and it became more of an engineering exercise" to simply make bigger, faster routers, Bansal says. The edge, on the other hand, was a creative opportunity.

Bansal and his colleagues formed Laurel Networks, which makes a multiservice router to link existing services, such as ATM and frame relay, to new IP backbones. Laurel's ST200 Service Edge Router and Laurel Provisioning System are intended to serve two kinds of service providers: incumbents that now provide several services over different networks and want to combine those in an IP core; and new carriers that have an IP core and want to get customers on that backbone through the services with which they are familiar.

The company, based in Pittsburgh, far from the beehives of the network business, took a conservative approach to expansion, Bansal says.

"We do things when they're needed," he says. "The definition of a successful start-up was, you had to have 300 people. We had [about] 120 people when we shipped our first product [in January]." Since its founding in October 1999, the company has had no layoffs, he says.

Laurel took advantage of its "greenfield" opportunity to build an edge device from the ground up, combining Layer 2 switching and Layer 3 routing, and using network processors that can be reprogrammed with new capabilities.

The ST200 can take in ATM, frame relay and Ethernet traffic from a metropolitan network and send it over an IP core, using the IETF's Multi-protocol Label Switching (MPLS) standard to maintain all the guaranteed service levels associated with those technologies. The programmable network processors, which perform all packet processing and forwarding at wire speed on ST200 line cards, aid the performance and scalability of the device, Laurel says.

The founders' concept paid off earlier this year when Laurel signed what it calls a major international deal — the companies declined to disclose the terms of the deal — with Level 3 Communications.

So far, the large backbone provider has deployed ST200 routers live in 33 North American and European cities, according to Rob Hagens, senior vice president for global network engineering at Level 3.

Level 3 deployed the routers to provide secure edge-to-edge VPNs that can transport Layer 2 frames over MPLS, Hagens says. Those VPNs use a set of extensions to MPLS, commonly called MPLS Draft Martini after a lead developer, Level 3 Engineer Luca Martini. Level 3 chose Laurel because Level 3 believed it offered the broadest support for Layer 2 protocols, including ATM, frame relay and Ethernet, Hagens says.

PROFILE: LAUREL NETWORKS

Founded:	1999
Headquarters:	Pittsburgh
Products:	ST200 Service Edge Router; Laurel Provisioning System
Investors:	$77.3 million from New Enterprise Associates, Trinity, Worldview Technology Partners and others.
Management:	Atul Bansal, co-founder, CEO and president; Stephen Vogelsang, co-founder and vice president of marketing; Robert Warden, co-founder and vice president of engineering.
Customers:	Level 3 and other global carriers and service providers
Employees:	120
Fast Fact:	If you're looking for an alumni directory for FORE Systems, look no further than Laurel.

The carrier began offering Ethernet services earlier this year and is now beginning to roll out ATM and frame relay services. The VPNs provide guaranteed quality of service from end to end, Hagens says.

Laurel's programmable architecture also paid off as the company refined its product for Level 3.

"As we have gone through beta test with Laurel, there have been minor tweaks we've wanted to make, and they've been able to make those quickly with their programmable ... architecture," Hagens says.

By developing a Layer 3 router with Layer 2 capability from the ground up, Laurel has developed a type of product that will be important for the edges of emerging IP carrier networks, says Mark Seery, an analyst at RHK.

"If you look at an ATM switch from someone like Cisco, it's really not a router in the sense that Laurel is building. For those networks that are aggressively moving toward convergence on IP and MPLS, Laurel is a much more optimized solution," Seery says.

Few carriers are pushing IP convergence now, but the technology has long-term potential, he says. By the same token, programmable chips like the ones Laurel uses are controversial now but might represent the next wave of network processors after less flexible ASICs.

However, deployment of devices such as the ST200 is still in its early stages, and it remains to be seen where and when significant demand will come from, analysts say.

Large-scale deployment will have to wait for acceptance from regional Bell operating companies and other established carriers, says Kevin Mitchell, an analyst at Infonetics Research.

"Most RBOCs don't even have a significant IP MPLS network to start with," Mitchell says. Still-emerging standards, such as Draft Martini, make the bigger carriers hesitant, he says.

"There's still a lot of stuff in flux . . . the incumbents are going to wait a while," Mitchell says.

Lawson is a correspondent with IDG News Service's San Francisco bureau.

Short Takes

■ **InvisibleHand Networks** last week announced the availability of **Merkato 2.2,** the latest version of the company's software for dynamically pricing, selling and allocating bandwidth. The upgrade provides more options for designing and implementing bandwidth strategies to accommodate fluctuations in demand. Merkato is designed to let service providers aggregate traffic and dynamically sell excess capacity. This increases network utilization and revenue opportunities, InvisibleHand says. The software also lets buyers purchase bandwidth based on need, reducing overall bandwidth costs by an average 30%, the company says.

■ **Sheer Networks** has added IP VPN support to its service management products. The company's IP VPN offerings provide service activation, service and network discovery, real-time fault-correlation and impact analysis. The products, called **Sheer MetroCentral IP/VPN — MPLS,** reveal end-to-end topologies across switching, routing and virtual routing layers through autodiscovery of physical and logical infrastructure, Sheer says. The MetroCentral VPN discovery engine automatically learns provider edge and label switch router logical and physical inventory, enforces Multi-protocol Label Switching configuration and performance parameters, and provides VPN service activation.

■ **PacketLight Networks** has announced that **LightCross CEO Robert Barron** has joined its board of directors. Barron has more than 20 years of experience in marketing, sales, technical, operations and executive management. Before joining LightCross in 2001, he was president of Lucent's Metro Optical Networking Group, following Lucent's acquisition of Chromatis Networks, where he was CEO. Before that, Barron was vice president of Nokia's Broadband Services division, after Nokia acquired Diamond Lane Communications.

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Cisco COMET: High Speed, High Availability, Optical Networking Solutions for the Enterprise

WHITE PAPER

Cisco Systems

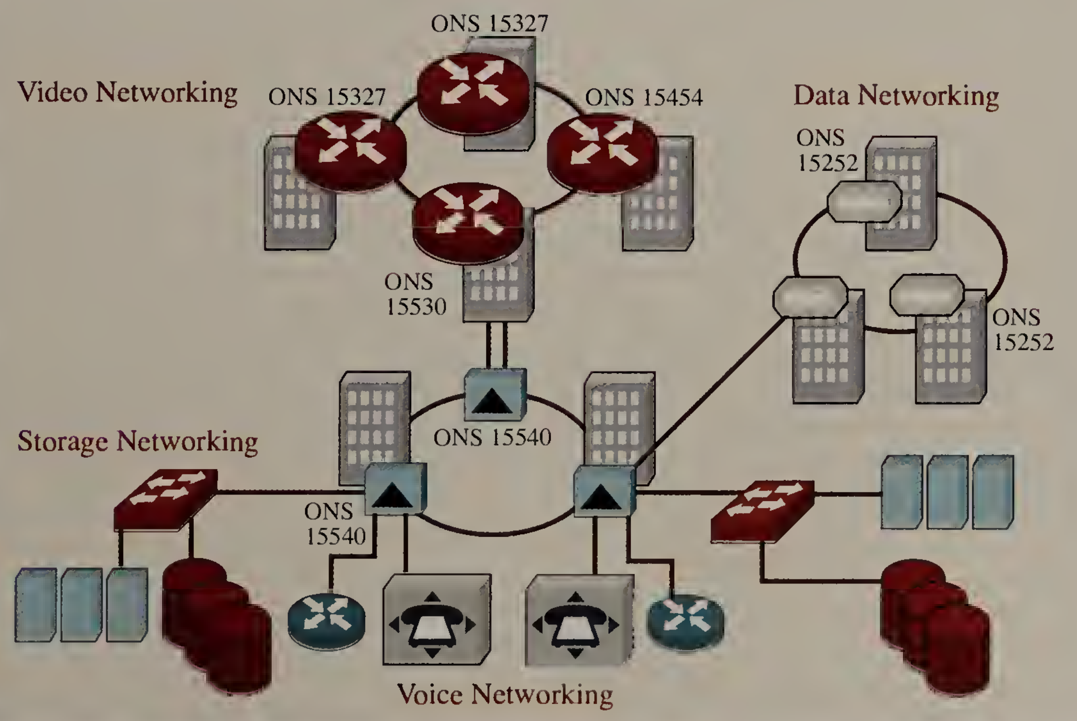
Cisco COMET: Optical Networking Solutions for the Enterprise

OPTICAL NETWORKING has emerged as the foundation for campus, metro and wide-area networking with the ability to integrate voice, video, data and storage over a single network. Multiservice networking — through Synchronous Optical Networking/Synchronous Digital Hierarchy (SONET/SDH) and Wavelength Division Multiplexing (WDM) — provides increased bandwidth and performance while facilitating data center, application server, storage and network infrastructure consolidation to optimize resources and reduce costs. In addition, optical networking supports storage-area networking (SAN) and IP-based network-attached storage (NAS) solutions to effectively access, manage, and protect corporate data, and to provide the foundation for business resilience applications. Optical Ethernet provides a powerful dynamic, high-speed Gigabit Ethernet and 10-Gigabit Ethernet for high-capacity, high-performance applications.

Cisco Systems is an industry leader in next-generation optical networking. The Cisco Complete Optical Multiservice Edge and Transport (COMET) product portfolio integrates data, voice, video, and storage applications over a single, end-to-end optical network (Figure 1).

Figure 1.

Enterprise Optical Networking



Cisco COMET provides the optical foundation for Cisco AVVID (Architecture for Voice, Video and Integrated Data) and leverages Cisco expertise in IP, data networking, voice over IP (VoIP), storage networking and optical networking. Cisco COMET is designed to meet today's networking challenges while providing the network capacity, performance, and resilience necessary to meet future business application requirements.

Enable and Enhance Application Performance

Capacity, performance, and availability problems can stifle company growth, reduce business productivity, and result in user dissatisfaction. A Cisco COMET network provides virtually boundless capacity and performance, is easily scalable for traffic growth—from T1/E1 and Ethernet to OC-192/STM-64 and 10-Gigabit Ethernet—with aggregate throughput to 320 Gbps. In addition, Cisco COMET provides both the low latency and low jitter necessary for demanding VoIP, video, and collaboration applications.

Extend and Integrate Your Current Cisco Network

As the largest and most experienced provider of enterprise networks in the world, Cisco has the ability to deliver complete network solutions--both today and in the future. Cisco COMET extends an existing Cisco network infrastructure to deliver any application or service—such as IP, storage, Ethernet, time-division multiplexing (TDM), or ATM—over a single, end-to-end, optical network.

Optical transport products, such as the Cisco ONS 15530, 15540, 15200, and 15454, provide transport for applications delivered through the Cisco Catalyst® 6500 Series Ethernet switches, the Cisco 7600 Series Internet Routers, and the Cisco 12000 Series Internet Routers. This ensures that service levels created at the network edge (such as with VoIP services) are maintained throughout the optical core.

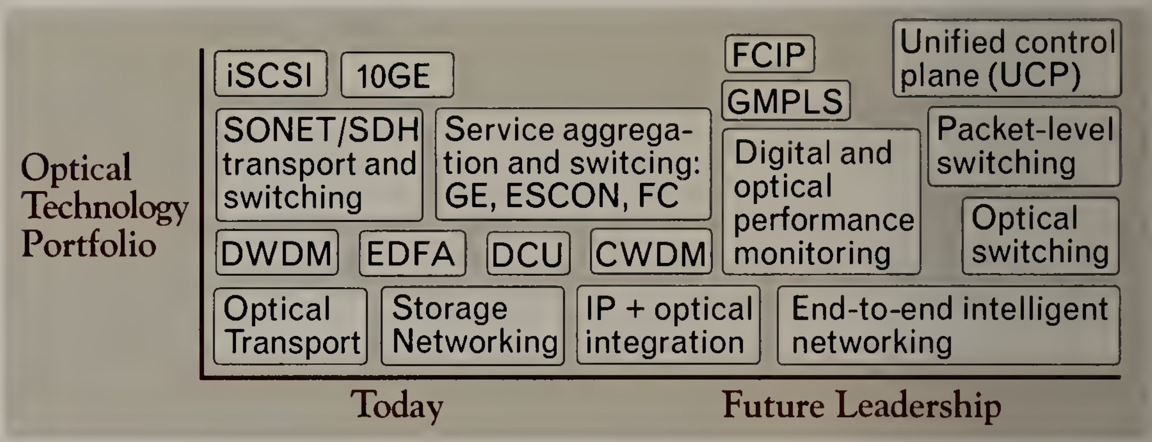
In addition, management of the Cisco COMET network is provided by a single, integrated client/server software application—the Cisco Transport Manager—which gives network managers visibility across the entire network.

Satisfy Current and Future Application Requirements

Cisco COMET provides a broad portfolio of optical networking capabilities to meet today's demanding application requirements, while providing the foundation for the bandwidth-hungry, performance-demanding applications of tomorrow. The breadth of available Cisco technology ranges from high-performance multiservice networking with SONET/SDH and DWDM, to IP-optimized transport through Gigabit Ethernet and 10-Gigabit Ethernet to Resilient Packet Ring/Dynamic Packet Transport (RPR/DPT). The Cisco portfolio also includes application-optimized solutions such as Fibre Channel, Enterprise System Connection (ESCON), Fiber Connectivity (FICON), Small Computer Systems Interface over IP (iSCSI), and Fibre Channel over IP (FCIP) for storage networking.

Cisco has quickly become the optical networking leader in the integration of voice, video, data and storage networking. Cisco is leveraging its expertise in IP, data networking, and pioneering efforts in maturing VoIP, while bringing storage networking and optical networking to the enterprise. Cisco is committed to maintaining its leadership position through ongoing technology developments that are moving rapidly from the innovation to deployment phases (Figure 2). These technology advanceswill protect and support enterprise network investments well into the future.

Figure 2: Cisco COMET Optical Technology Leadership


Optical Technology Portfolio
iSCSI
10GE
SONET/SDH transport and switching
Service aggregation and switcing: GE, ESCON, FC
DWDM
EDFA
DCU
CWDM
Optical Transport
Storage Networking
IP + optical integration
FCIP
GMPLS
Digital and optical performance monitoring
Unified control plane (UCP)
Packet-level switching
Optical switching
End-to-end intelligent networking
Today
Future Leadership

Enable Resilience Throughout the Network

Cisco COMET enables enterprises to deploy networks with the performance and resilience necessary for today's critical business services. Cisco COMET provides industry-leading system-level and network-level redundancy and reliability options, with protection at both the electrical and optical layers. Cisco COMET offers no single point of failure per system, optical layer protection with failover time of less than 50 milliseconds (for optical layer or SONET/SDH); and higher layer routing or switching, which provides the foundation for nonstop application networking. Predictable and measurable optical and digital performance provides the quality of service (QoS) necessary for policy-based networking.

Increase Network Productivity and Lower Total Cost of Ownership

Cisco COMET provides tremendous network flexibility through multiple technologies optimized to specific application requirements. The systems are designed for rapid bandwidth provisioning and fast deployment of new applications. Cisco COMET makes network growth easy, allowing for minimum disruption to existing services, either through optical integration with existing routers or switches, high-capacity SONET/SDH switches, or complete DWDM systems with protocol and bit-rate transparent optical wavelengths. Through network flexibility, rapid deployment, maximized performance, and scalable management, Cisco COMET provides a lower total cost of ownership.

Cisco COMET Optical Networking Solutions

Cisco COMET enables many enterprise networking solutions, including network consolidation of data, voice, video, and storage; storage networking and business continuance; and optical Ethernet.

Network Consolidation and Multiservice Networking

Consolidating data centers, application servers, storage, and network infrastructure helps to optimize existing IT resources by providing consistent application and data access to all users and reducing overall support costs. Consolidating corporate Internet and intranet applications also provides a unified company presence to customers and partners. Cisco COMET facilitates network consolidation through SONET/SDH, Coarse Wavelength Division Multiplexing (CWDM) and DWDM multiservice networking capabilities.

Storage Networking and Business Continuance

Storage networking provides IT managers with a cost-effective way to access, manage, and protect corporate data. Cisco COMET supports both SAN, with ESCON, FICON, and Fibre Channel connectivity, and IP-based NAS solutions. Storage networking improves data access, simplifies growth, streamlines administration, improves data availability and integrity, and reduces cost of ownership through storage consolidation. Storage networking also provides the foundation for business continuance applications, interconnecting data centers through a high-capacity optical network.

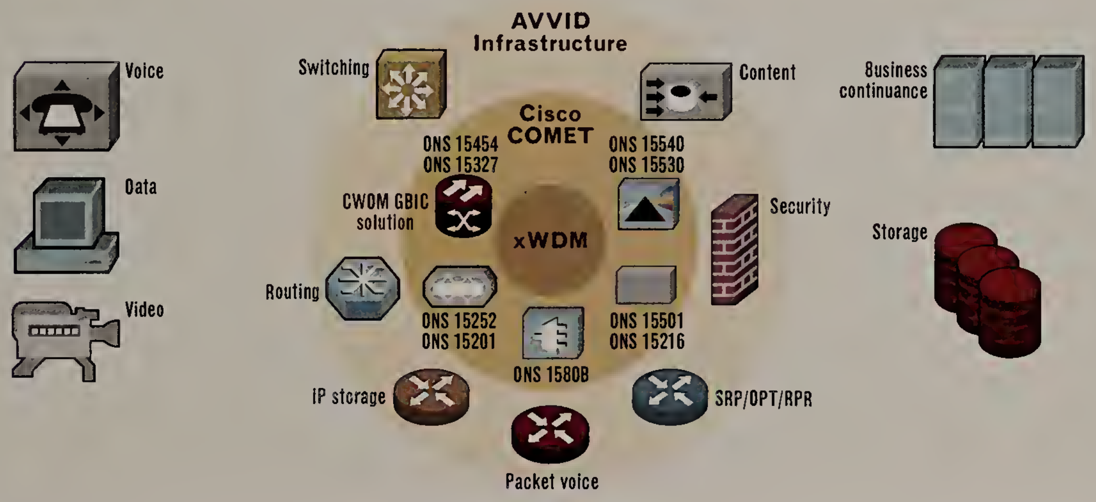
Optical Ethernet and IP Optimization

Optical Ethernet is a powerful tool for an enterprise network, because it allows Ethernet to be carried over a metropolitan area.

Cisco COMET supports Gigabit and 10- Gigabit Ethernet connections for very fast and efficient transport of IP traffic, eliminating the need for traditional protocol conversion and rate adaptation associated with traditional carrier wide-area networking services. RPR/DPT and Packet over SONET (POS) can provide an effective means of transporting IP traffic over a metro or wide-area network, offering enterprises the flexibility to consolidate applications over private or public backbones. Cisco COMET supports optical Ethernet and IP optimization over SONET/SDH, CWDM, and DWDM, and through the integration of optical technology into IP switches and routers.

Figure 3

Cisco COMET: The Optical Foundation for Cisco AVVID



The Cisco COMET Optical Portfolio

Cisco COMET provides complete optical solutions—from high-capacity, high-performance DWDM systems and SONET/SDH switches to optical integration with existing routers or switches. This diverse product portfolio meets a broad range of enterprise goals (Figure 3).

Campus, metro, and regional DWDM solutions provide an optical-foundation for the consolidation of data, voice, and video, as well as storage traffic over a resilient, high-capacity, high-performance optical network. The systems are highly scalable, to a maximum of 32 wavelengths per fiber pair. With transmission speeds of up to 10 Gbps per wavelength, these systems can transport an aggregate capacity of 320 Gbps. Scalable optical add/drop multiplexing (OADM) capabilities support point-to-point, ring, and meshed topologies, providing optimized network design for campus and building interconnection. Topology flexibility helps minimize the amount of fiber required for network connectivity, while simultaneously maximizing the redundancy and restoration capabilities for failure recovery.

The systems support protocol- and bit-rate-independent traffic from 16 Mbps to 2.5 Gbps, and are capable of transporting large quantities of high-speed traffic such as SONET/SDH, ESCON, FICON, Fibre Channel, and Gigabit Ethernet. Multiport aggregation modules further maximize network capacity by multiplexing multiple circuits onto a single wavelength. For example, up to 40 ESCON channels can be transmitted over a single wavelength, providing data-center connectivity for storage or disaster recovery applications. Demanding IP data or streaming media applications can be supported using 10-Gigabit Ethernet or OC-192/STM-64.

Optical amplifiers, dispersion compensation units, and performance monitoring units are available to extend network connectivity across large regional areas, while ensuring that the network operates at peak performance.

For bandwidth-intensive metro interconnect and long-haul applications, DWDM transport systems are available today that offer 80 channels at up to 10-Gbps transmission rates, scaling to more than 320 channels and 40-Gbps transmission rates in the future.

COMET DWDM solutions are designed to future proof the enterprise network, providing tremendous flexibility and scalability while minimizing costs and maximizing the transmission capacity over owned or leased fiber.

SONET/SDH multiservice provisioning platforms (MSPPs) combine the capacity of optical transport with the intelligence of IP to cost-effectively deliver next-generation voice and data services. These systems provide multiservice transport over a flexible, high-capacity SONET/SDH backbone. SONET/SDH add-drop multiplexing (ADM) and digital cross-connect capabilities provide traffic aggregation from T1/E1 to OC-192/STM-64, along with data interfaces such as 10/100-Mbps Ethernet and Gigabit Ethernet. Next-generation SONET/SDH provides a cost-effective means of consolidating new, high-bandwidth applications—such as Gigabit Ethernet—with traditional low-speed voice, TDM data, and Ethernet applications.

Cisco has also integrated optical networking capabilities into existing router and switch products. In addition to a wide range of optical interfaces, such as SONET/SDH, Gigabit Ethernet, and 10- Gigabit Ethernet on routers and switches, a CWDM Gigabit Interface Converter (GBIC) supports up to eight wavelengths over a single fiber pair. The CWDM solution supports OADM capabilities for building ring or hub-and-spoke networks. With each wavelength capable of carrying a Gigabit Ethernet channel, CWDM dramatically increases the traffic-carrying capacity of an existing switch or router. The Cisco CWDM GBIC solution provides an easy and cost-effective way to deploy Gigabit Ethernet in campus, data-center, and metropolitan-area access networks. Optical transport is also provided on other products, such as storage routers, providing iSCSI, IP, and Fibre Channel networking.

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To learn more about Cisco COMET optical networking solutions, visit:
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Technology Update

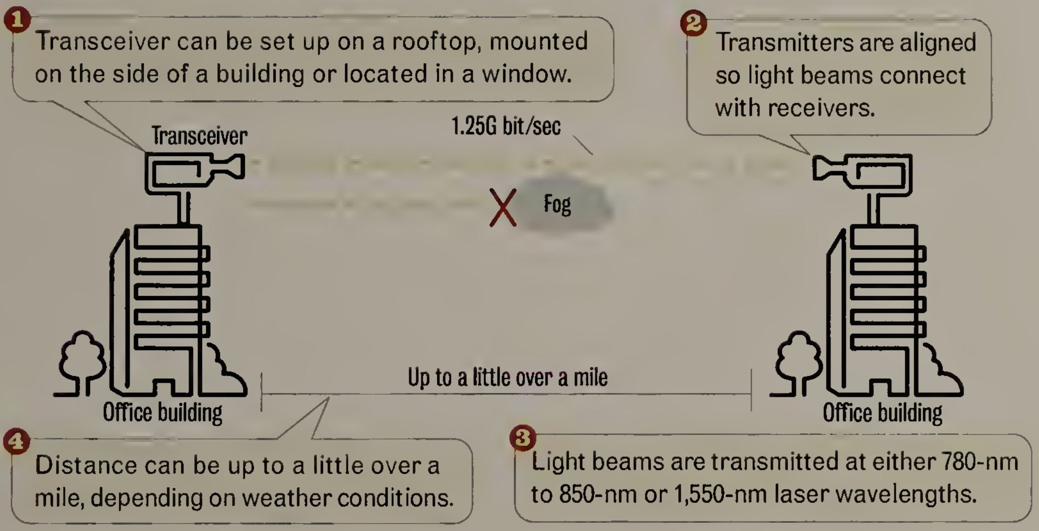
■ AN INSIDE LOOK AT THE TECHNOLOGIES AND STANDARDS SHAPING YOUR NETWORK

Lighting up the last mile with optics

BY BOB POTENZA

HOW IT WORKS Free-space optics

Free-space optics offers "last-mile" broadband connections to locations that have line-of-sight access to each other.



① Transceiver can be set up on a rooftop, mounted on the side of a building or located in a window.

② Transmitters are aligned so light beams connect with receivers.

③ Light beams are transmitted at either 780-nm to 850-nm or 1,550-nm laser wavelengths.

④ Distance can be up to a little over a mile, depending on weather conditions.

Only 5% of commercial buildings in the .S. have fiber optics to their door, lthough most are within a mile of a fiberptic connection. This "last mile" is provng to be a major bottleneck to expanding roadband services to many potential ustomers.

Free-space optics (FSO) systems could e a viable option for many applications. hey can be installed along any line of ght up to a little more than a mile.

FSO systems are based on transceivers nat include one or more laser diode ansmitters and a corresponding receiver n a housing that also includes optical enses, data processors, fiber connections nd an alignment system. The technology protocol-independent and can be used ith ATM, SONET, Gigabit Ethernet or virually any network.

FSO systems commonly support data ates of 1.25G bit/sec, and systems up to 60G bit/sec are being developed.

Transceivers can be located on a oftop, on a corner of a building or ndoors behind a window. Link lengths, or e distances between transceivers, are etermined for site-specific weather conitions and can vary from more than 600 eet up to about a mile in a clear, dry tmosphere.

FSO networks are based on either 780m to 850-nm or 1,550-nm laser waveength systems, which have very different ower and distance characteristics.

Lasers of much higher power can safely y used with 1,550-nm systems than with 80-to-850-nm systems. This is because avelengths less than about 1,400 nm are focused by the cornea into a concentrated spot falling on the retina, which can cause damage.

Conversely, the cornea absorbs wavelengths greater than 1,400 nm before they reach the retina, letting the eye safely absorb higher intensities. Systems that use the 1,550-nm wavelength are on the order of 50 times more powerful than shorter-wavelength systems, which corresponds to greater link distances, higher data rates and greater power to penetrate atmospheric interference. However, 1,550-nm systems are at least 10 times more expensive than 780-nm to 850-nm systems.

FSO operates in an unregulated section of the spectrum, so no permits are required by the Federal Communications Commission. Because there's no need to dig trenches to lay cable, the permits associated with digging up streets, disrupting traffic and the like also are eliminated, and installation normally is complete in a few days.

Data security is inherently good. The optical beam is extremely difficult to intercept, requiring a receiver to be placed directly in the narrow, invisible light path. If the beam is broken, the connection immediately drops out. The optical signal is also relatively immune to jamming, in contrast to radio frequency systems.

The primary limitation with FSO system performance is interference because of weather, especially fog. Fog interference in optical transmission is similar to rain fading in radio transmission. The fading is the result of scattering of the beam as it encounters particles in the atmosphere, which is a consequence of the similarity in size of the signal wavelength and the particle diameter. FSO wavelengths, which are on the order of 0.001mm, are much smaller than raindrops, which are typically about 0.5mm to 3mm in diameter, and pass through relatively unaffected. FSO signals unfortunately are close enough to the size of fog particles, which range from 0.01mm to 0.05mm, to be significantly scattered. FSO signals are scattered in the same way fog scatters visible light. Heavy fog can reduce an FSO signal.

Dealing with fog is a relatively straightforward matter with modern laser diodes and optics. Transmitted power is maximized up to the limits of eye safety. Link lengths are designed for a specified level of availability considering local weather. Micro-optics at the diode can be used to correct for aberrations and astigmatism, optimizing the output beam for greater fog-penetrating power.

Modern FSO systems readily achieve 99.9% availability with reasonable link lengths, up to 1,500 feet or so. A back-up (radio or cable) connection is usually required to guarantee the 99.999% availability demanded by carrier-class applications.

This latest generation of FSO systems, with improved fog-penetrating power and reliability, might prove to be the ideal broadband solution for many last-mile applications.

Potenza is senior vice president of marketing and sales at Blue Sky Research. He can be reached at bpotenza@bluesky research.com.

Ask Dr. Internet

By Steve Blass

We have more Class B networks than we need. Are there any opportunities to release them for public use, and who would we work with? Is there a market for selling IPv4 addresses?

You would have to release your organization's unused public IP addresses by returning them to the service provider that provided the address assignment. If your Class B addresses were originally received by registering with the InterNIC, then the American Registry for Internet Numbers (ARIN), RIPE NCC (in Europe) or APNIC (in Asia/Pacific) would be the registry organizations responsible for the directly registered IP address block assignment.

As for whether a market exists for reselling public IP address assignments, you may move addresses between your own organizational units under certain conditions, but "IP address space assignments are nontransferable and are not assignable to any other organization," ARIN says. The reason is that "addresses are assigned to an organization for its exclusive use for the purpose stated in the request, provided the terms of the Registration Services Agreement continue to be met." For more information on the ARIN policy, go to www.arin.net/policy/transfer.html.

Blass is a network architect at Change@Work in Houston. He can be reached at dr.internet@changeatwork.com.

GEARHEAD
INSIDE THE NETWORK MACHINE
Mark Gibbs

Closing our traps (and messages)

Last week we promised to discuss how we could handle both types of system message logging, that is, syslog messages and SNMP traps. We looked at a number of tools, but in the end we found that Kiwi Syslog Daemon from Kiwi Enterprises — which we reviewed in a previous Gearhead column ("Down Under syslog," www.nwfusion.com, DocFinder: 1330) — is the best we could find.

Kiwi Syslog Daemon is the only product we have found that lets us field SNMP traps and resend them as syslog messages or vice versa (that is, syslog messages resent as SNMP traps).

You also can forward either type of message to another node, thus letting syslog messages be integrated into an SNMP network management system. And even better, with a little creativity you can create syslog messages and SNMP traps that contain whatever content you please.

Another tool from Kiwi Enterprises that might be useful in a message logging environment is Kiwi Logger (for more information, go to DocFinder: 1331).

Kiwi Logger is a Windows console-mode utility that sends text messages via the command line to any syslog daemon (such as the Kiwi Syslog Daemon). You can use UDP or TCP, set the priority value as either a numeric value or symbolic name (makes understanding batch files much easier) and the utility will return an error value in the case of failure.

Yet another tool you might want to check out when playing with SNMP traps is TrapWatcher from Paul Regenhardt (www.concentric.net/~Paulreg/), which is free. This is a Java 1.2 application that listens (on the standard port 162) for SNMP traps. All received traps are decoded into ASN objects that are reported to a console window and a log file.

TrapWatcher is very useful and comes with two other tools: TrapRecorder and TrapPlayer, Java 1.2, applications that, respectively, records SNMP traps into a data file and plays them (fabulous for debugging).

If you are planning to really use syslog messaging heavily (quite possible if you have lots of routers to manage) you might want to check out Envision from Network Intelligence (DocFinder: 1332).

Envision, which runs under Windows 2000 with Win32 Java 2 Runtime Environment Version jre-1_3_1 or later on a dedicated machine (to ensure adequate performance in environments that have a high volume of events), is designed for message rates of up to 5,000 events per second . . . which translates to one busy, complicated network environment.

The product provides real-time alert notification via sound, alert windows, e-mail, SNMP or pager messages; can be interrogated via a Web interface; supports multiple managers (pretty much a requirement when dealing with large networks) and ad-hoc queries; offers "more than 180 reports and graphs for in-depth network analysis, user analysis, security analysis and system analysis"; and customized and schedulable reports.

The range of devices monitored by Envision is limited to a list of common products (DocFinder: 1333), a shortcoming, because there is no support for custom devices. Pricing starts at $1,500 for handling up to 100 events per second while 5,000 eps will set you back $46,500.

A really cool version of the product is packaged as an appliance that the company calls the Network Intelligence Engine and says can be deployed in 10 minutes. Pricing starts at $19,250 for 1,000 eps and tops out at $59,500 for 5,000 eps.

So, in this series of stories we've mentioned SNMPv1, SNMPv2 and, very briefly, SNMPv3. In March of this year, the Internet Engineering Steering Group approved SNMPv3 as a full Internet standard and the first implementations are appearing. New Cisco routers are being shipped with SNMPv3 support.

So, what is SNMPv3 all about? In an article on the protocol by William Stallings in the Cisco "Internet Protocol Journal" for December 1998 (DocFinder: 1334), Stallings says: "As one of the SNMPv3 working documents puts it, 'SNMPv3 is SNMPv2 plus administration and security.'"

We recommend Stallings' article, the SNMPv3 resources page at The Institute of Operating Systems and Computer Networks (DocFinder: 1335) and *Network World's* Network Management Primer (DocFinder: 1336) as starting points.

Next week, no more messaging. In the meantime, send yours to gearhead@gibbs.com.

Cool Tools
Quick takes on high-tech toys
By Keith Shaw

Create video magic at your desktop

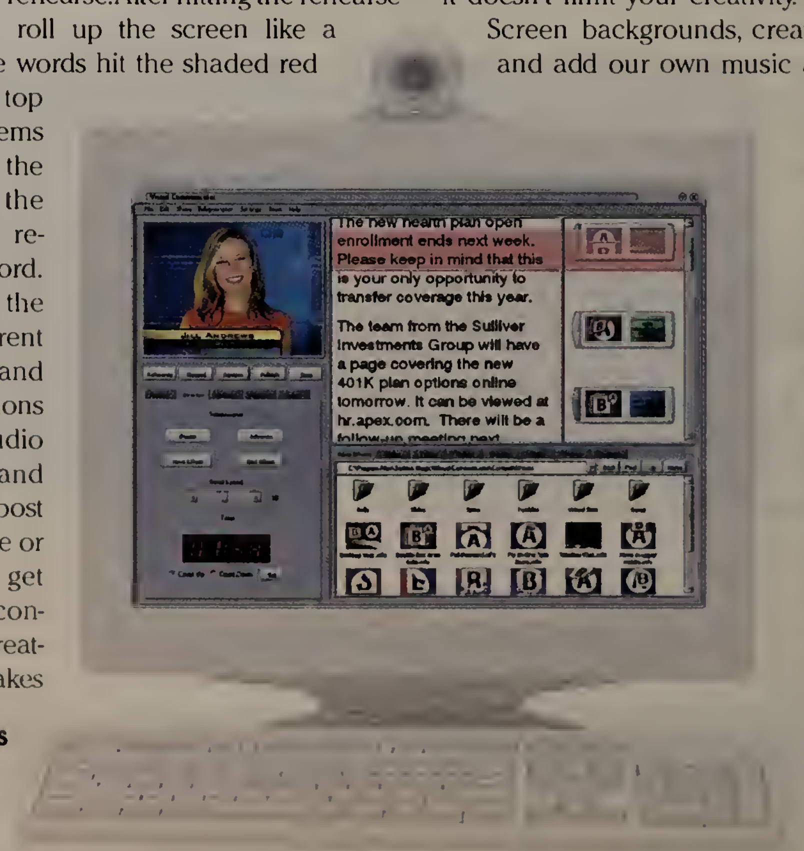
We can't say enough about Serious Magic's Visual Communicator Plus software (www.seriousmagic.com), which lets users create their own "newscast" that rivals the quality seen on many professional television broadcasts. The software costs between $100 and $150 (we recommend the $150 Plus version, which adds a green Chromakey screen backdrop and clip-on microphone), which is much less than what professional video companies charge for their services.

We don't think this software will put professional video companies out of business — but it still addresses the needs of several users at companies that can't afford these services. For example, a CEO who wants to give an address to stockholders via video would probably go with the pros. But a human resources vice president who wants to give a weekly update on benefits could use the software to provide a video newscast. Adding video to a company's internal (or external) communications at the nonexecutive level can be accomplished easily with this software. What PowerPoint did for static presentations, we think Visual Communicator will do for video communications.

The software can be installed on a Pentium III Windows PC with at least an 800-MHz processor and a Web camera. In our tests we preferred using our more expensive digital video camera, but it works well with just a Web camera.

The user interface is broken down into three areas — a video screen at the left shows you the image from the camera, and on the right is an area for you to write a script. In another area, you insert actions that tell the software what to do, including inserting a video clip or playing music. Dozens of examples of premade shows are included, such as introductions from an anchor who can then send it live to the reporter in the field. Also included are several effects, including transitions where graphics can fade in or out. One word of caution — simple is better, otherwise your show will end up looking like a bad PowerPoint animation presentation.

After you've written the script and figured out all the video effects, it's time to rehearse. After hitting the rehearse button, the script will roll up the screen like a teleprompter. When the words hit the shaded red line (very close to the top of the screen so it seems like you're looking at the camera), you recite the script. After you've rehearsed, it's time to record. You can then publish the final product on different video formats (.ASF and .AVI) with different options for the screen size, audio transmission rate and frame rate. You can post your show on a Web site or e-mail it. Once you get comfortable with the controls of the software, creating a complete show takes about 15 minutes. The end result — a professional-looking broadcast — will simply amaze you.



The new health plan open enrollment ends next week. Please keep in mind that this is your only opportunity to transfer coverage this year.

The team from the Sulliver Investments Group will have a page covering the new 401K plan options online tomorrow. It can be viewed at hr.apex.com. There will be a follow-up meeting next

Visual Communicator lets you produce a video broadcast on your PC.

The V-Screen (the green background sheet that provides a Chromakey effect) can add to the TV studio effect, as your show can now "report" from different locations (the software includes several cool backgrounds).

The software was addictive — we kept coming up with new ideas and ways to use it. We settled on creating a newscast that gave weekly updates on our company's bocce league. Another great feature of this software is that it doesn't limit your creativity. We could add our own V-Screen backgrounds, create our own title graphics and add our own music and video very easily. The software works with standard .JPG graphics files, audio .WAV files and video .MPG files.

The price might make you to think it's a consumer product, and several items included in the software should appeal to consumers. But we think the core software will appeal to many business users who want to find a new way to communicate with employees for a fraction of the cost, yet retain a professional look and feel.

Shaw can be reached at kshaw@nww.com.

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opinions!

EDITORIAL

Beth Schultz

Call for entries

You've earned your corporate stripes for network projects that make your company more competitive. And we'd like to help reward you in *Network World's* 18th annual User Excellence Award competition.

The User Ex Award program gives us the opportunity to do one of our favorite things — showcase enterprise organizations using network technology in innovative ways to further corporate goals.

Over the years, we've had the honor of showcasing the networks of companies such as American Airlines, American Express Travel Related Services, Best Western, Duke University, Eli Lilly, First Boston, Ford Motor, Hyatt, Olsten Staffing Services and Prudential Insurance.

Last year, Prudential Financial took home the top User Ex honor for a massive IP VPN that it rolled out to support the majority of its 25,000 telecommuting employees and business partners. Besides cutting remote access costs in half, the network let the financial services company attract and hire employees who want to work from home, need to work closer to customers or are physically unable to make a daily commute.

NetworkWorld USER EXCELLENCE AWARD 2002

In 2000, Kent State University took home the award for a converged voice, data and video ATM network built with savings from Centrex bills. These are great stories showing how network finesse can result in huge organizational gains.

As always, we will evaluate submissions based on the business case, technology choice and core benefits. We want to know how your network meshes with your company's goals and how the project contributed to the organization's bottom line.

So share your network story, be it about a technology migration or a network overhaul, by submitting a nomination for our User Ex Award. Just go to Network World Fusion, at www.nwfusion.com, DocFinder: 1337, and fill out an entry form by Aug. 9.

If you win, you will get to tell your story in our Best Issue, a Signature Series edition that will be published Nov. 11, and on Network World Fusion. You also will receive industry recognition at an award ceremony at the ComNet Conference & Expo in January.

And what could be better than getting broad acknowledgement for a job well done?

— Beth Schultz
Editor, Signature Series
bschultz@nww.com

HTML hell

Regarding Mark Gibbs' Backspin column about the flak he caught for suggesting that HTML mail might be a good thing (www.nwfusion.com, DocFinder: 1322): HTML mail, when used correctly, may have the potential to be less flat and dull, but how many people are capable of using it correctly? Instead of an inbox full of pleasantly formatted and easily read messages, you are going to find garish formats using multiple fonts of various sizes and clashing colors on busy backgrounds. The effort needed to make the mail look "pretty" is better spent revising and editing the text, which is something people don't do enough as it is. Give me plain text any day. It's easier to read, and uses less bandwidth and storage space.

Mark Dowdey
Engineer
WorldCom
Richardson, Texas

HTML e-mail should be banned. It is one of the most significant security and privacy risks yet to be exploited.

I don't care that non-HTML mail is "flat and dull." I have yet to get important mail that isn't "flat and dull" — it's only the advertisers that seem to attempt to use HTML mail and, then, generally, to allow them to record that the mail has been read and from where. Personally, I don't think they should know that I've read or haven't read their mail.

Mark Gibbs' comment "There will always be newbies, and IT's job is to protect and educate them so that they can do whatever job they are supposed to do" is also pretty naive. Who is my parent's IT department? What do you do with legitimate software that silently alters one's PC settings to make the security model be more friendly to the software, and who is responsible for resetting those altered settings? And for those who use dial-up modems at home, pay long-distance charges, or have to pay for Internet minutes over a certain amount — who pays those charges when reading offline mail suddenly activates your Internet connection (and may leave it up for long periods of time)?

William Wells
Minneapolis

Add my name to the anti-HTML contingent. I really don't find simple text mail that boring and unexciting; I feel that it's more efficient and concise. It should inspire more considered thought without the mental distraction of how to make the design appropriate. After all, great literature is invariably composed and printed in plain text.

Jack O'Callaghan
Systems administrator
Martha's Vineyard Co-operative Bank
Vineyard Haven, Mass.

No need to RSVP

Regarding your Technology Update piece "RSVP provides quality of service" (www.nwfusion.com, DocFinder: 1323): Not sure what the driver is for having a story on Resource Reservation Protocol (RSVP), as opposed to RSVP-Traffic Engineering. RSVP is not going to happen in the Internet. Quality of service is no longer such a hot topic, given that bandwidth is rarely a scarce resource. And the idea of core routers maintaining per-session state was thrown out a long time ago. Finally, deploying an additional protocol such as RSVP would add complexity to the core of the network.

Giles Heron
Principal network architect
PacketExchange
London

E-mail letters to jdix@nww.com or send them to John Dix, editor in chief, Network World, 118 Turnpike Road, Southborough, MA 01772. Please include phone number and address for verification.

More online! **www.nwfusion.com** Find out what readers are saying about these and other topics. **DocFinder: 1321**

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INTERNET PERFORMANCE

Brad Chen

The 30-second rule

In 1999 a Zona Research report popularized the "8-second rule," which held that if a company's Web page does not download within 8 seconds, users will go elsewhere. Since the report's publication, many Web sites appear to have lost track of the customer experience.

To understand the state of Internet performance, early last month Appliant surveyed 1,500 of the most popular Web sites, including AltaVista, AOL, eBay, MSN and Yahoo. Unlike prior studies that used robot-based test traffic, we instead downloaded each home page, counting content components, measuring document sizes and computing best-case download times for a typical end-user connection via a 28.8K bit/sec modem. The results were curious and frightening. We found that the average home page uses 63K bytes of images, 28K bytes of HTML, 12K bytes of other file content and has a best-case first load time of 32 seconds. In other words, the average American users wait about 30 seconds the first time they look at a new home page. So much for the 8-second rule.

At first, one might imagine that second-tier sites are pulling down the 1,500-site average, but closer observation shows this to be false. The average load time for AltaVista, AOL, eBay, MSN and Yahoo home pages is about 25 seconds.

Sites such as AltaVista and AOL receive many repeat visits, with load time benefiting from document caching in the browser. To estimate cached download times, we assumed browsers retain all cacheable document components and respect relevant HTTP headers. Average best-case cached load time for the five first-tier sites is 4 seconds, quite a bit faster than the 1,500-site average of 7.8 seconds. These figures are good news for users and are more in line with popular notions about user patience, but they are best-case only. Actual performance also depends on factors such as network conditions and Web server load.

You're in good company if your home page is slow. Only about 100 sites had first-load times of less than 10 seconds. At the other end of the scale, more than 80 sites had first-load times above 60 seconds. In fairness, some sites that target a U.S. business audience are less concerned with dial-up performance.

Other interesting statistics: The average home page uses 23 distinct images with a total size of 63K bytes. JavaScript is taken for granted: 88% of the home pages used scripting, with an average of 10K bytes of script for sites that use it. Only 3% of pages used VBScript. About 36% of the pages load Cascading Style Sheet files, with an average size of 5.3K bytes. FRAMEs or IFRAMEs were found in 18% of the pages. Flash was found in 8% of pages, with an average size of 80K bytes.

Overall, these results cast a shadow over progress in user experience. One possible conclusion is that Internet users are more patient than previously thought. Another possible conclusion is that current Web site operators are inconsiderate of users. If you run a Web site, are your users giving you a break, or are you taking them for granted?

Chen is CTO for Appliant, a Seattle firm specializing in end-user experience management for Internet and intranet-based services. He can be reached at bchen@appliant.com.

You're in good company if your home page is slow. Only about 100 sites had first-load times of less than 10 seconds.

YANKEE INGENUITY

Howard Anderson

Come home, Mike Armstrong

The rah-rah days of the 1990s telecom boom are over and not coming back. The WorldCom explosion was loud . . . and there will be more. It is now time to pass out the blame.

Let's start with Wall Street, for blindly rewarding the god of Growth. The boards of director at companies such as AT&T also deserve blame for not staying the course. Breaking AT&T into three companies and four separate stocks was a convoluted strategy that ran exactly contrary to CEO Mike Armstrong's original plans. But the board wanted to "unlock value" — whatever that means — and convinced Armstrong to disassemble what he had assembled.

Maybe Armstrong wasn't so dumb after all. He recognized that telecom was in a long-term decline and did something about it — he bet on cable.

Why? To begin with, he was pushed by Wall Street to increase sales and profits. Wall Street kept making inevitable comparisons with WorldCom, Qwest and Global Crossing and downgrading AT&T stock because its growth and margins couldn't keep up. Of course it couldn't; WorldCom was showing 62% margins and Qwest was showing 70%. But no one knew they had to cook the books to do so.

Did Armstrong overpay for cable? Sure. But that's easy to say now. Paul Allen overpaid. Bill Gates overpaid — in fact, Brother Bill ran through $10 billion trying to break into the cable business. AT&T paid $4,100 per cable subscriber, which is about twice what they are worth. Comcast paid $4,600 per subscriber for its deal with Lenfest. Hindsight is always 20-20. Three years ago, $4,000 per subscriber was the "going rate," and Armstrong didn't have the luxury of buying when prices were cheaper.

The real issue was Wall Street saw AT&T's core operations as slower-growth and higher-cost, when in fact they were neither. The new carriers captivated Wall Street. The Street was overdosing on lotus leaves. They bid up and pushed the equity and junk bonds of the new kids on the block — and now those new kids are on the auction block. None of them compared with AT&T, in quality of service or reach. In the end, The Street punished AT&T and that led to the breakup.

It absolutely drove Armstrong and Sprint's Bill Esrey nuts. Every time they wandered down to talk to the "buy" side, they were hammered: "Why can't you be more like WorldCom? More like Qwest? More like Global Crossing?" Global Crossing at one time was worth more ($47 billion) than General Motors. Let that sink in for a while.

WorldCom was buying exactly the wrong thing — dozens of long-distance companies, and long-distance was turning into a profitless commodity. It bought MCI for $44 billion and then offered $115 billion for Sprint. At least Armstrong was buying something of value — cable.

We industry analysts also deserve some blame. Didn't anyone notice that we now have several times the core network telecom capacity that we needed? And the Internet just wasn't going to take up that slack? And we were rewarding companies such as Qwest for its capacity and not for its customers?

Any idiot can build capacity if it can sell enough junk bonds. The demise of the industry is probably caused more by every Wall Street house offering all that wonderful debt — and no one was thinking about how they were going to service that debt or even pay it back.

Where do we go from here? AT&T is now going to be three companies and will carry $14 billion to $16 billion in debt, which gives it an earnings before interest, taxes, depreciation and amortization-to-debt ratio of 1-to-5. That's doable.

We used to have 11 stable telecom companies: the seven regional Bell operating companies, AT&T, MCI, Sprint and GTE. Now we have just five: BellSouth, SBC Communications, Verizon, AT&T and Sprint. Of the 30 or so domestic carriers, 20 may seek bankruptcy protection. Is the communications industry in worse shape than it was before the Telecom Act of 1996?

Yes.

Anderson is senior managing director of YankeeTek Ventures, a Cambridge, Mass., venture capital fund for early-stage technology companies. He is also founder of The Yankee Group and the William Porter Distinguished Lecturer at Massachusetts Institute of Technology. He can be reached at handerson@yankeetek.com.

The real issue was Wall Street saw AT&T's core operations as slower-growth and higher-cost, when in fact they were neither.

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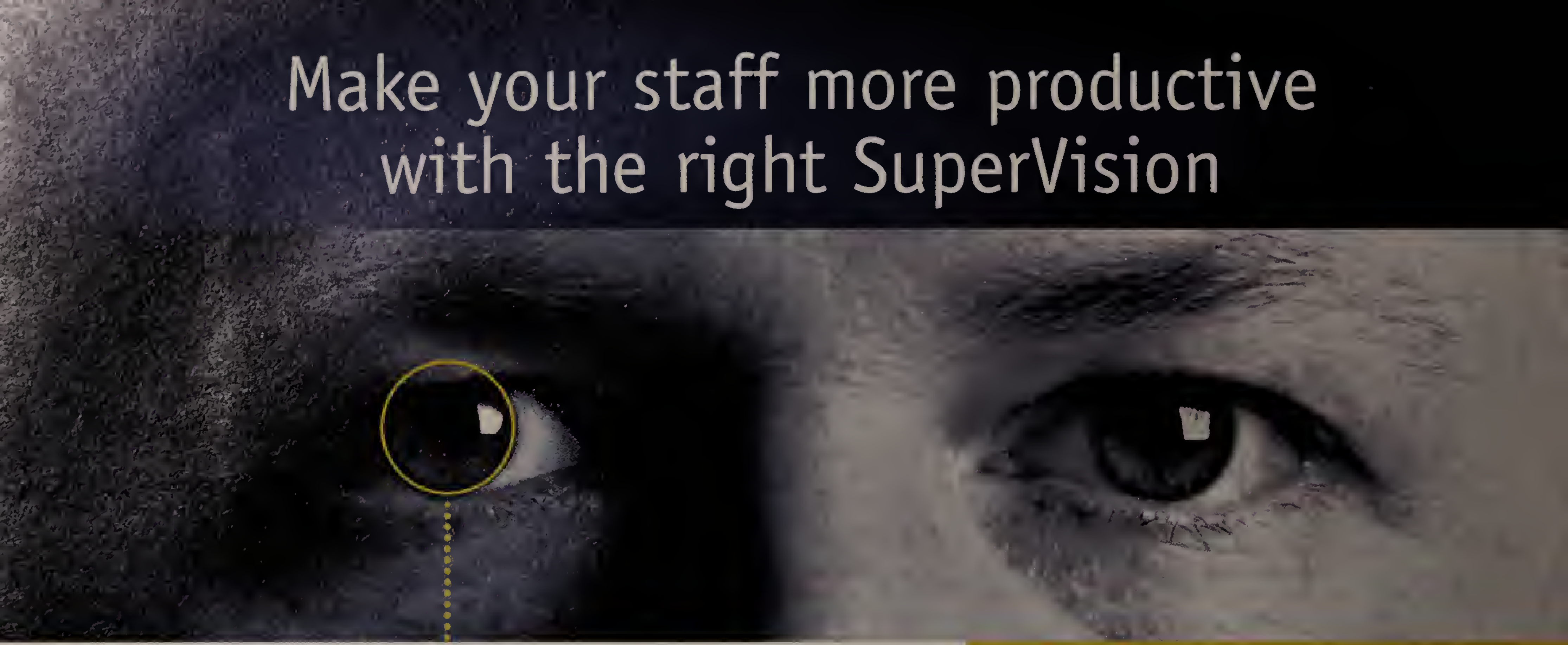

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- **Passion.** As the sluggish economy continues to stress corporate budgets, you face tough decisions about what to do and what not to do for the enterprise network under your care. Your passion for making your network more efficient, secure, reliable and faster, could make the difference in getting budget increases.
- **Confidence.** As the network services and equipment markets continue to implode, you have to pick vendors that you can stand behind. That means picking vendors with ever more vigilance and mapping out strategies you know will keep your network safe, even if a key vendor falters.
- **Adaptability.** The curveballs keep coming, be they in the form of corporate changes, e-mail worms or industry upheaval. Your ability to adjust quickly is paramount to keeping the network up and running efficiently.

- **Pride.** With financial debacles such as Enron and WorldCom top of mind for every corporate board, business practices — including those used in IT systems, applications and network operations — will come under scrutiny. Stand proudly behind what you have built and what you support, and others will do the same.

— Beth Schultz
Editor, Signature Series
bschultz@nww.com

The Signature Series

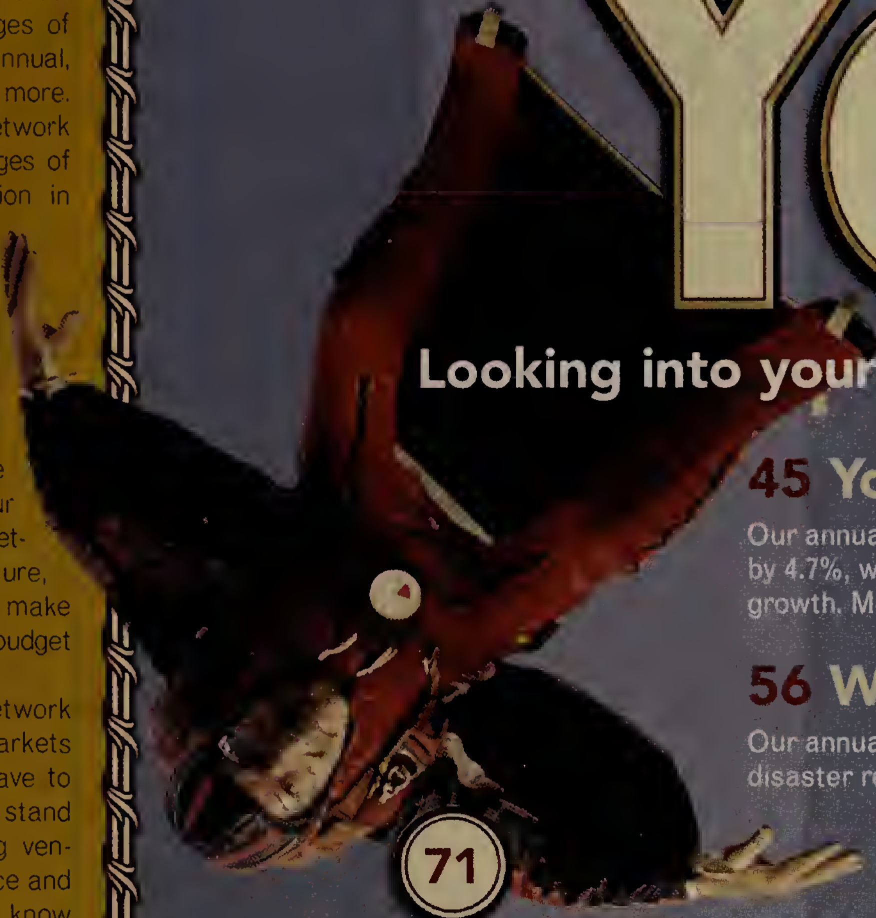
The You Issue is one of six bimonthly supplements providing insights, opinions and information on the biggest trends in networking. Look for the inside story on the hottest network technologies in the next installment of the Signature Series, the Buzz Issue, coming Sept. 23.

Cover illustration by Chris Sickles

You

The Signature Series

Looking into your job, salary, future and free time



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Chris Newsome signed on as IT boss for a NASCAR team — and helped Jeff Gordon win a championship.

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Some of the sharpest IT executives today have formal succession plans in place. Should you?

You online

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4 Phases of Mapping out a Business Continuity Strategy for your Company

— By Steve Kenniston

WHAT IS BUSINESS CONTINUITY? Business Continuity is any proactive process that identifies key business functions and outlines potential threats to those functions. A good Business Continuity Strategy, then, is the plans and procedures that ensure that these key business functions can continue, no matter the circumstances.

Threats to business continuity (BC) may include natural disasters, hacking, software bugs, viruses, employee revenge, theft, terrorism or human error. Business Continuity is not limited to a single one of these threats. A lack of good BC practices can cost a company a great deal of money. Two facts that surfaced post 9/11 were: 1) 50% of the companies who experience critical system outages for 10 days or more will never recover and 2) Each 8 hours of critical system downtime can cost a business .5% market share loss. It is clear from these statistics alone that issues affecting business continuity are unpredictable and a lack of a BC plan can cripple a business. There are four main phases to consider when building a Business Continuity plan. These phases are as follows:

1. *Perform an assessment of the environment.*
2. *Communicate and perform business GAP analysis.*
3. *Develop and execute on the plan.*
4. *Test and revise plan on an ongoing basis.*

Phase 1: Assessment

Collect all of the relevant information about the company's infrastructure. The goal of the assessment phase is to document both the good and the bad. Companies often do not follow a set of best practices that would better protect their environment due to a lack of resources or funds. The assessment phase is the time to put all of this information on the table - it is, in fact, critical to a successful BC plan.

Here are a few areas within the environment to consider:

- The security of the buildings (key card for outer and datacenter doors.)
- The physical layout of the infrastructure (compute systems and storage.)
- The logical layout of the infrastructure (raw data.)
- The data protection strategies practiced in the environment (backup, replication, etc...)
- The internet / intranet security (Firewalls and VPNs.)
- The current change control policies and bestpractices.
- The documentation of the information captured above.

The assessment phase should cover remote offices as well as the main datacenter. Remote sales offices may contain infrastructure that can solve some basic BC needs. There are tools that can help with the assessment phase. Storage Network Management (SNM) tools probe the compute environment and report on the physical infrastructure that exists. Storage Resource Management (SRM) tools provide information about the data that lives within the environment. Backup reporting tools provide valuable information regarding how successful current backup practices work. These tools, coupled with existing documentation will provide all the information necessary to move to the next phase.

Phase 2: Communicate

The key to the second phase is communication. Plan a strategy meeting. Be sure to include personnel from each business unit including Finance and Security. At a collective strategic level, the business unit managers may not know if the service levels provided meet the requirements for true business continuity. Prior to the meeting, have the financial organization put data together that outlines how much it costs the company for one hour of down time. Each department will need to understand the cost of downtime in order to put the proper attention on business continuity.

Inform each business unit how much data they have and the practices that go on surrounding that data. Next, ask if the basic business processes that are going on for each department meet current needs. Each business unit's decision-maker should be checking with the other business units to ensure that data required by other organizations has the proper service levels. Take the time to make sure everyone is aware of policies that affect the data in the environment. Data sharing, retention, migration and deletion are all aspects of data protection that relate to building good BC practices. As a group, decide on a minimum amount of downtime each business unit can tolerate. Discuss who should have access to what data and which equipment. These basic service levels should be easily achievable by IT and Security. Any organization that requires a higher level of service should pay for the increase in costs.

Phase 3: Plan

The next phase is the development phase of the plan. All of the information regarding the physical and logical infrastructure is available, the business practices that are performed regularly are available and each business unit has set an expectation regarding a level of service that must be attained in order to stay in business. Identify any changes that need to take place to the original policies in order to meet any new service level requirements. Create a list of hardware, software and any infrastructure (security) changes that will be required in order to carry out the new policies. Develop two plans. One would be more comprehensive than the other, however both would protect critical elements within the business. The ultimate plan would also include the change control process to ensure that each business unit can accept scheduled down time during particular hours of the day for testing and maintenance.

Phase 4: Execute and Test

Have an additional meeting to get agreement across all organizations on the new BC plan. Once this has happened, it is time to implement the plan. Deploy any new equipment or business policies in the organizations that require an upgrade in service levels most. After the new BC plan is deployed, they should be tested regularly. Testing should include not only common disaster recovery practices, but also issues surrounding security, viruses, and scheduled maintenance. Develop a testing plan and inform the business unit that tests will be taking place. These tests may be disruptive for a short period, but in the end, will ensure a solid BC plan to keep the company running.

Business Continuity is an ever changing and evolving process. Once a plan is in place, keep monitoring and testing it. Every six to twelve months, have a meeting with the business units to make sure service levels are being met and identify any changes that need to be made. Doing so will ensure that your business is protected and there will be little financial risk.

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THE BEST-RUN E-BUSINESSES RUN SAP

Your salary, 2002:
Back to reality

Our annual salary survey shows compensation for network executives has increased by 4.7%, which outpaces the economy, but is back to earth after years of stellar growth. Meanwhile, factors such as job security are suddenly in vogue.

■ By Paul Desmond

Pay hikes may not be as high as in the recent past, but network executives still are garnering healthy increases in overall compensation despite a generally stagnant economy.

That about sums up the IT salary picture over the past year, according to the 2002 Network World Salary Survey, conducted with the help of King, Brown & Partners. Network executives — those with manager or director titles — reported a 4.4% increase from last year for an average base salary in 2002 of $70,450 (see chart, below). Across all job titles, from CIO to staff, the 1,678 survey respondents reported an average increase of 4.7%, for a base salary of more than $71,500 in 2002. While most respondents expect only modest hikes, if any, in bonuses and stock options, when factoring those in, network executives expect to see a 4.7% increase in total compensation over 2001, to $75,460. Respondents at large organizations anticipate a 5.3% hike in total compensation to more than $78,000.

But network professionals will have to work for that money, upwards of 60 hours per week, with those in the upper salary brackets shouldering the heaviest schedule (see chart, page 52).

True, these increases are down from the heady days of 7% overall hikes reported in each of the last two

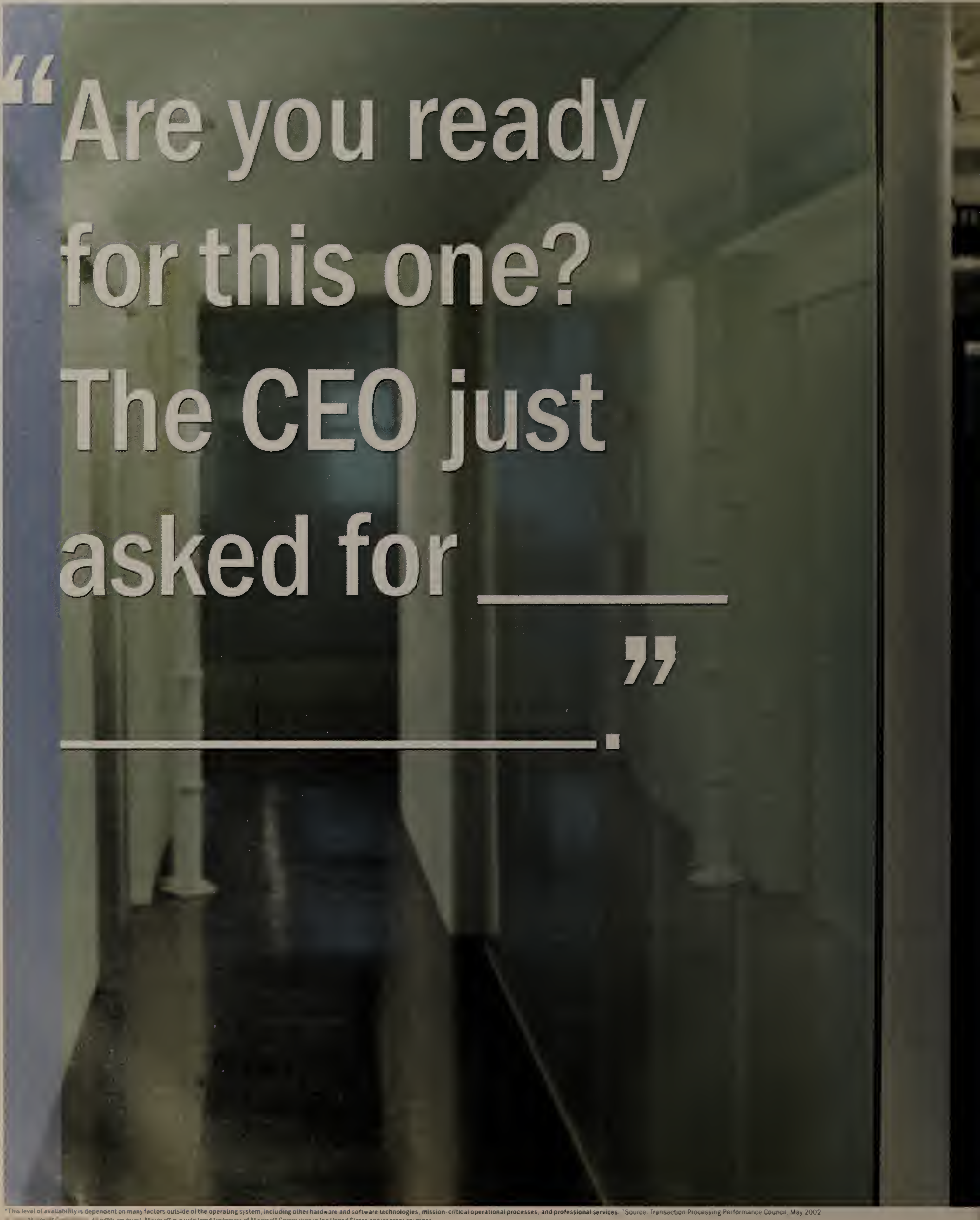
Edmund Hung, director of networking for Guitar Center, is pleasantly surprised by the industry's 2002 salary gains.

BRUCE HERSHEY

How much are you earning?

While factors such as geography and education affect an individual's compensation, the charts below depict the averages in compensation for various IT professionals. Try out our interactive Salary Calculator at **www.nwfusion.com/you2002, DocFinder: 1425,** to get a sense of what others with similiar qualifications earn.

	2001 salary	2002 salary	Change	% change
Total	**$68,340**	**$71,550**	**$3,210**	**4.7%**
Senior IT management (CIO/Sr. VP/VP of MIS/IT/IS/DP)	$103,750	$108,820	$5,070	4.9%
Manager/director	$67,470	$70,450	$2,980	4.4%
MIS/IT/IS/DP	$69,330	$72,300	$2,970	4.3%
LAN/WAN networks	$62,200	$65,180	$2,980	4.8%
Telecommunications	$70,580	$73,730	$3,150	4.5%
Other management (corporate management/Internet/intranet/extranet)	$86,140	$91,230	$5,090	5.9%
Staff	$60,450	$63,180	$2,730	4.5%
Network architect/designer/analyst/database administrator	$66,600	$69,910	$3,310	5.0%
Network operator/technician/other network operations staff	$53,800	$56,340	$2,540	4.7%
Trainer/help desk/tech support	$48,320	$49,700	$1,380	2.9%
Other staff	$62,560	$64,960	$2,400	3.8%


"Are you ready for this one? The CEO just asked for ______ ________."

*This level of availability is dependent on many factors outside of the operating system, including other hardware and software technologies, mission-critical operational processes, and professional services. †Source: Transaction Processing Performance Council, May 2002
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Formal education vs. certifications

This snapshot of average base salaries shows that more formal education means more money, but that having more certifications doesn't equate to greater pay.

Degree	2001 base salary	2002 base salary	% change
High school diploma	$58,540	$61,680	5.4%
Associate's degree	$60,930	$63,800	4.7%
Bachelor's degree	$67,460	$70,830	5.0%
Advanced degree	$82,080	$85,240	3.8%
Certifications			
No professional certifications	$70,640	$73,850	4.5%
One professional certification	$66,030	$69,170	4.8%
Two or more professional certifications	$64,280	$67,590	5.1%

annual surveys — and the 11% hike for network executives last year. Still, network professionals are faring far better than their counterparts in other white-collar jobs. For the year 2000, the most recent for which data is available, the Bureau of Labor Statistics reports white collar pay averaged $19.35 per hour, or $40,248 per year based on a 40-hour week. Even correcting for the age of the data, it's clear that the network industry still outpaces most others. And network professionals are beating inflation soundly, as the BLS Consumer Price Index was up only 2.8% for 2001.

That holds true across the board, from the staff level professionals whose average base salary increase was 4.5% (to $63,180), to those at the top of the IT totem pole, who got salary hikes averaging 4.9% (to $108,820). Indeed, those at the CIO and senior vice president levels also enjoyed bonuses that were four times greater than their manager/director counterparts along with nearly 16 times more income from stock and stock options.

The increases reported in this year's survey "are more than I anticipated," says Edmund Hung, network director for Guitar Center, a 4,000-employee retailer based in Westlake Village, Calif. Like many survey participants, Hung braced for a period of slow growth since the Sept. 11 terrorist attacks, because of the nature of Guitar Center's business. "We're in the business of joy and happiness, helping people make music," he says. His company prepared for hard times by scaling back performance bonuses from the norm of 15% to 12%.

Hung's own salary increase, at about 5%, was better than the 4.4% of his colleagues in the management/director category. That's doubly significant given that with his base salary of $110,000, he already does much better than his peer group.

Location accounts for some of that difference. As is the norm, base salaries for all respondents in the Pacific region outpaced all others except New England, with overall averages of $76,720 (more than 7% higher than the nationwide average) and $78,980 (more than 10% higher), respectively. The effect of a new California law on computer professional pay is likely bumping up those Pacific figures (see story, left). States in the Southern Midwest and Northwest pay the least, with base salaries for both regions averaging around $62,500.

Company size is another factor. Interestingly, companies with fewer than 100 employees pay best — nearly $85,000 in total compensation — while companies in the 100- to 999-employee range pay least, an average of just more than $70,000. Companies with 1,000 or more employees pay an average of at least $80,000.

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More survey results. From survey demographics to loyalty by job title, we've got in-depth results on the You portal.

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If it's a sizeable bonus you're after, you'll most likely get it by taking a job with a company that has fewer than 100 employees, too. Respondents from such firms expect bonuses of nearly $8,000 this year, up more than 22% compared with the $6,500 they got in 2001. Companies in the 1,000- to 9,999-employee range are stingiest with bonus dollars, at about $3,600, while those above 10,000 employees are expected to pay an average of nearly $5,000 in bonuses for 2002.

In fact, bonuses of as much as 15% of salary are fairly common for smaller companies, says Jeremy Schulman, a senior recruiter who specializes in placing IT workers for the Lucas Group in Atlanta. The industry norm, particularly for larger companies, is the 8% to 10% range, he says.

Still, bonuses have stagnated during the past few

California law creates salary pickle

Companies are forced to pay unwieldy overtime rates to network professionals.

California companies shoulder an extra salary burden with respect to IT staff. In September 2000, Gov. Gray Davis signed a law stipulating that only computer professionals making at least $41 per hour were exempt from the state's overtime pay law. That law says workers must be paid time and a half after eight hours worked per day, whereas most other states mandate overtime pay only for workers who put in more than 40 hours per week.

The $41-per-hour figure translates to an annual salary of $85,280 for a 40-hour week, which, of course, is rare. "People in our industry don't work eight-hour days," says Edmund Hung, network director for Guitar Center in Westlake Village, Calif. "We've had to bring people within our organization up to the $85,000 level to avoid paying them overtime."

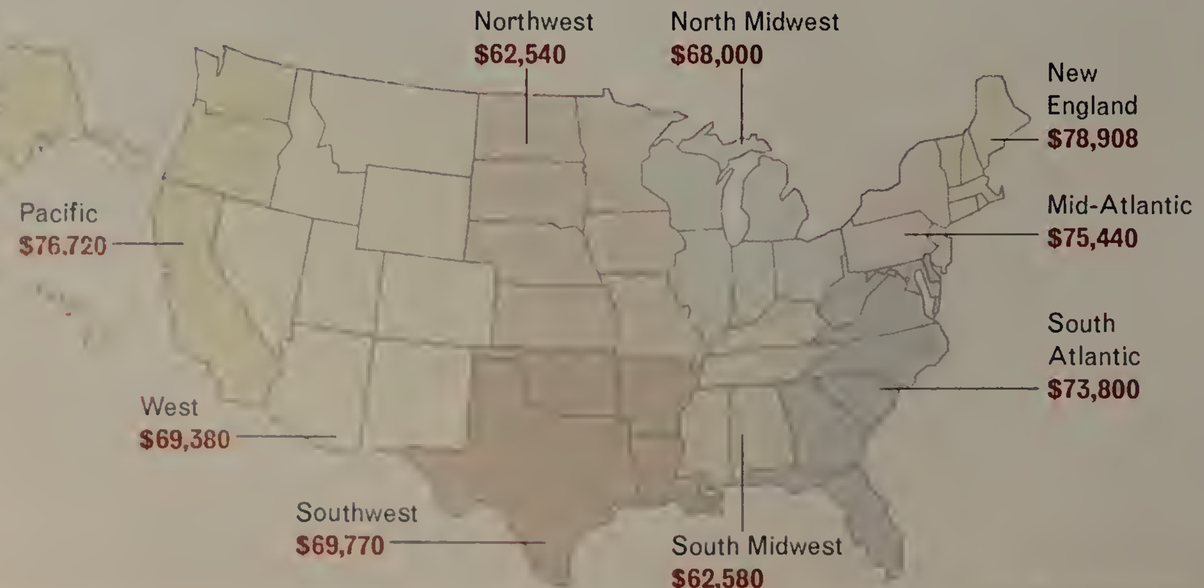
That includes LAN administrators and PC technicians who previously earned anywhere from $68,000 to $75,000, he says. One Guitar Center LAN administrator whose base salary was too far from the $85,000 plateau to justify a pay increase to that level is now pulling in far more than that rate, at $130,000 per year, because of overtime. Now management wants to increase his base salary to $85,000, but the employee doesn't want to take the increase because he knows he'll lose out in the long run. "It becomes a tug of war between management and the employee as to what we should agree on," Hung says, noting the fight is not yet over. "It's going to be nasty."

The average base salary for all Pacific region respondents to the 2002 Network World Salary Survey is $76,720, and they work an average of more than 58 hours per week. For 2002, the figure the California law is based on will be $42.64 per hour, or $88,691 annually, because of an automatic cost-of-living increase. If California companies have to pay any IT professional making less than that an average of 18 hours per week at overtime rates, it's going to be nasty indeed.

— Paul Desmond

Choose a coast for higher pay

Employers in the New England and Pacific regions continue to shell out the highest average pay.



Source: Network World's 2002 Salary Survey

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years. In last year's survey, respondents reported receiving bonuses of $4,400 on average in 2000. This year's respondents said they got $3,830 last year and expect an average of $4,330 in 2002.

As for stock and stock options, most respondents are getting amounts so small as to have little effect on their overall compensation package. The average stock-related compensation all respondents received last year was just more than $1,000, and they expect an average of about $1,200 this year. Those figures represent a steep downward spiral, from an average of more than $5,000 in 1999 to $2,000 in 2000. An exception to the rule, as might be expected, is for titles falling under the senior IT category, such as CIO and vice presidents. Such respondents expect an average of more than $9,300 in stock-related compensation in 2002, an increase of more than 8% from the average of $8,670 last year.

Education pays

If you want to earn the really big money, then follow this simple formula: Stay in school. This year's survey showed a direct correlation between level of education and salary (see chart, page 48). Those with a bachelor's degree earn $7,000 more on average than employees with only an associate's degree while employees with graduate degrees earn an average of nearly $14,000 more than their counterparts with bachelor's degrees.

Certifications appear to be a poor substitute for more formal education. Indeed, survey data shows no discernable pattern in terms of pay and certifications. Those with no certifications make more than those with one, while employees with two or more certifications make less than those with just one. In general, respondents seem to try to compensate for less formal education by picking up more certifications. At least 50% of those with only high school or associate degrees have at least one certification while only 45% of those with bachelor's degrees and 35% of those with graduate degrees have at least one certification.

But some people aren't impressed by any amount of education.

"I could give a darn about a degree," says Jon Wright, vice president and Internet engineering manager at SunTrust Banks in Richmond, Va. Wright, who has nine engineers reporting to him, says he looks more for real-world experience and notes he's seen students just out of high school who had what it takes and those with master's degrees who couldn't find their way around a router.

Yet Schulman, "absolutely, 100%" agrees that formal education will get you paid more than certifications. "It's because all the dot-coms are gone now," he says. Previously, dot-com companies snapped up workers who held Microsoft, Cisco or Oracle certifications and could do some form of development work. Now, more established companies prefer employees with a solid educational background. "Generally, it shows more of a stable background if a person has a degree," he says.

Maintaining job satisfaction

One of the ways employees traditionally receive education and training is to have their employers pay for it. In fact, lack of professional development and training is one of the leading reasons employees jump ship, respondents told us when ranking factors that would cause them to seek a new job. Training rated a 3.0 out of a possible 4. Notably, too, in this post dot-com era, job security has moved into the top five factors this year, ranking a 3.1 (see chart, page 52).

Kendall Norling, manager of IS for Finagle A Bagel, a regional restaurant chain based in South Boston, Mass., says job security is the most important factor to him. "In this day and age, you've got

Defining the gender gap

Although the gap might be narrowing, women in IT remain underpaid and value different factors for job satisfaction than men.

It's no secret that men generally get paid more than women for comparable jobs. But results from the 2002 Network World Salary Survey holds hope that in the IT world, the gap is diminishing.

Female respondents to the survey reported base salary increases of 5.6% in the past year, from $60,720 to $64,150, vs. 4.7% for men, from $69,160 to $72,390. While a larger percentage doesn't mean as much if your salary is lower to begin with, at least it's a step in the right direction.

Larger percentage increases for women "might be a way to even out some of those inequities," says Debra Nagy, voice network specialist for a large insurance company in the Northeast. "Managers are all given choices on what we pay different people, so long as we stick to a specific budget."

Judy Berglund, manager of network services for Truserv, a Chicago hardware chain, accepts it as fact that men get paid more than women. The pay discrepancy "has gotten better over the years," she says. "It's starting to come into balance, but I don't think it ever will fully." The merit-based system that her company uses is designed to provide a failsafe against gender-based discrepancies in pay increases.

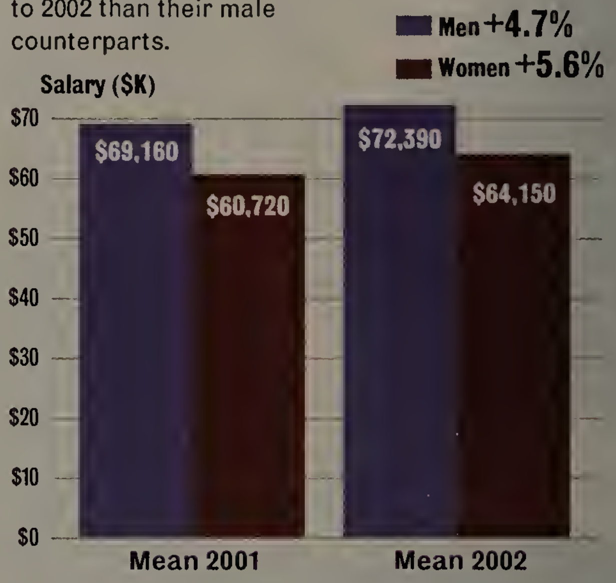
In addition to salary, survey findings showed differences in the criteria women deem critical to taking a job as compared with men. Among the criteria that women rated statistically higher than men were professional development and training, family friendliness, recognition/appreciation of your work, annual salary reviews/raises, job schedule flexibility, leave and proximity to home.

The survey also shows that women tend to work fewer hours than men. Women put in an average of just less than 57 hours per week whereas men work nearly 64.

— Paul Desmond

Salaries of men vs. women

The gender gap might be narrowing as women saw larger average yearly salary increases from 2001 to 2002 than their male counterparts.

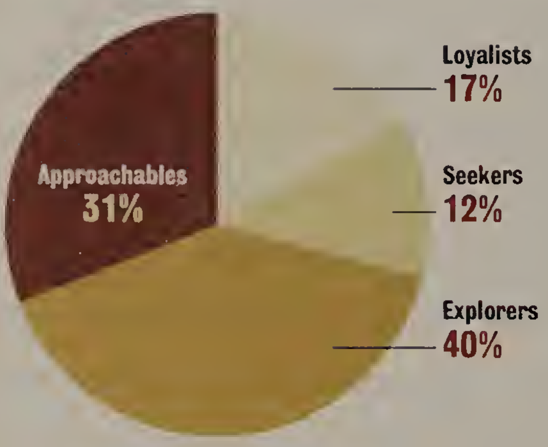


Your loyalty 2000-2002

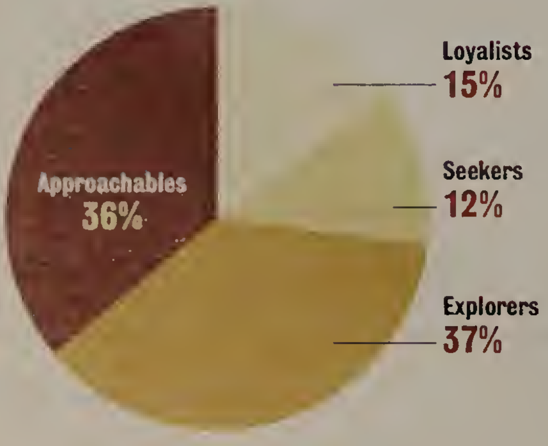
Hard economic times have slightly more employees inclined to stay put than last year and even fewer job seekers than in the employee-shortage heyday of 2000.

Seekers:	Actively seeking a new position.
Explorers:	Not actively seeking, but would follow up if they read or heard about an interesting opportunity.
Approachables:	Not actively seeking, but would follow up if personally approached with an interesting opportunity.
Loyalists:	Cannot envision changing jobs in the foreseeable future.

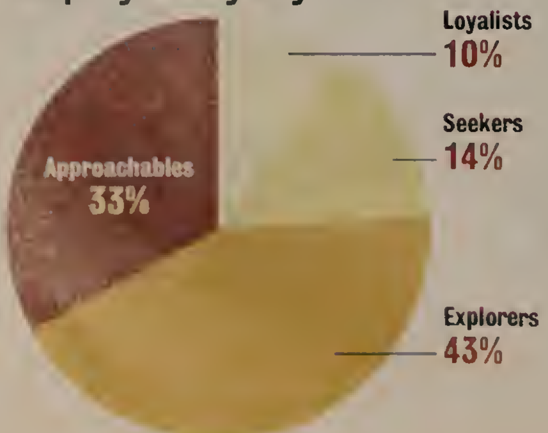
Your loyalty 2002



Employee loyalty 2001



Employee loyalty 2000



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to think of that," he says. "I've watched my friends go into dot-coms and get chewed up and spit out," he says. He's confident the 20-year-old, privately held Finagle A Bagel is well-financed and has a good future, having almost doubled in size in the three years Norling has served as its one-man IS department.

Norling maps nearly perfectly to other survey respondents in saying that other important job satisfaction factors for him are overall compensation, benefits and the challenge of the job. As for his salary, he could make the case that he deserves a raise, given that the average 2002 base salary for IT staff personnel in this year's survey is $59,450, a bit higher than what Norling makes for a more senior position.

Too many hours

Overall, network professionals are not actively job hunting more this year than last, although they are hunting far less than they were in the employee-shortage days of 2000 (see chart, 50). This, in turn, has lead to a change of heart on other aspects of job satisfaction. In years past, job flexibility was often cited as important, for instance. This year it rated about in the middle of the pack, averaging 2.7 out of a possible 4 in terms of how critical it would be in a decision to take a new job. But those who value their flexible schedules are sometimes willing to forgo a lot to get them.

Take Carlos Behr, an IS technician for the California Department of Food and Agriculture in Sacramento. He's one of two IT staffers in a branch with 40 employees, handling chores ranging from publishing Web pages to database administration and help desk.

"I have taken less [money] to have a flexible schedule," the four-year CDFA veteran says. "I have a munchkin at home and taking care of him, doing the whole Little League thing, it makes a big difference in life." Enough so that Behr is content making $32,400 annually, far less than his market value, according to our survey.

But then again Behr also doesn't feel compelled to put in the kind of hours that many of his peers at other organizations do. The average hours worked per week, including time spent working at home and on call, is more than 63.5 (see chart, above).

"That's not me, not at my pay rate," Behr says. "I'm doing about 40."

SunTrust's Wright is closer to the average, as he estimates he works between 50 and 60 hours per week. "I've got two young children. It gets rough," he says. "But I've got people who are putting in 80 or 90 hours per week," the result of being short-handed and having too many high-priority projects to tackle.

Statistically speaking, women put in significantly fewer hours per week compared with their male counterparts, an average of 56.9 hours per week vs. 63.8. That was just one of a number of differences the survey turned up between the genders (see story, page 50).

If you think you're working too much for too little pay, Guitar Center's Hung has some words of encouragement. "I've always firmly believed that if you can accept the challenge and do the work accordingly, somebody somewhere somehow will see your work and you'll be handsomely compensated," he says. As for himself, "I consider myself well-paid and stable, so I don't shoot for the moon."

Desmond is a freelance writer and editor in Framingham, Mass. He can be reached at paul@pdedit.com.

Your work hours

Those making the most money also work the most hours, particularly at home and on call. Try our interactive Salary Calculator, at **www.nwfusion.com/you2002, DocFinder: 1425,** to get a sense of what others with similiar qualifications earn.

		Hours worked per week, by salary				
Where you work	**Mean, all titles**	**$20-39K**	**$40-59K**	**$60-79K**	**$80-99K**	**$100K+**
At office	43	41	43	43	43	45
At home	6	4	5	5	6	10
Other locations	2	2	2	2	2	3
Traveling	1	1	1	1	1	2
On call	12	8	13	13	9	10
Total	**63**	**56**	**64**	**64**	**61**	**70**

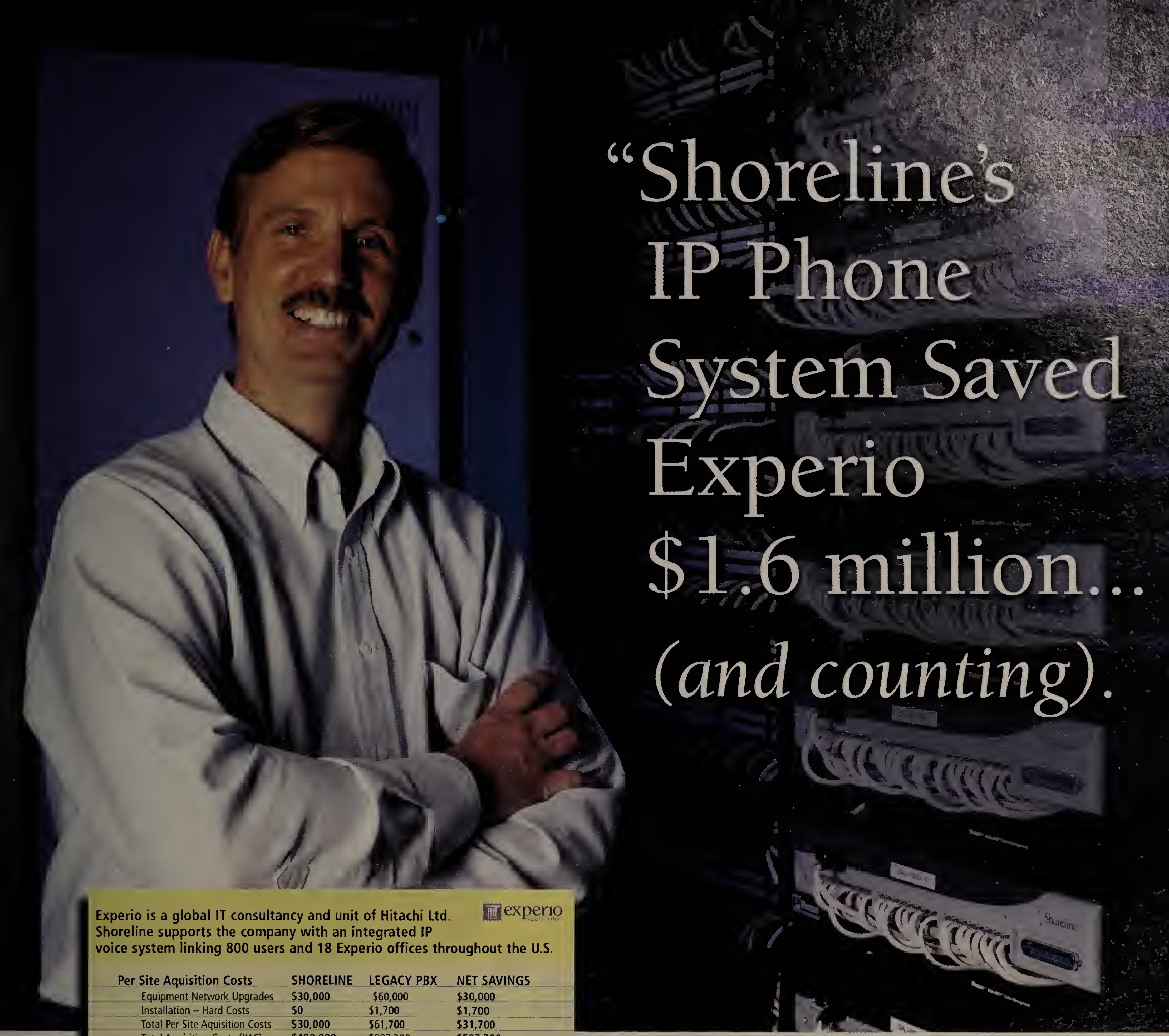
Kendall Norling, manager of IS for regional restaurant chain Finagle A Bagel may not make top dollar, but he's happy as can be with the company.

SHAWN HENRY

Your criteria for job satisfaction

We asked respondents to tell us how important each of the following factors are to a decision to change jobs. Respondents rated factors on a scale of 1-4, with 4 representing "critical."

Benefits package (insurance, etc.)	3.2
Challenge of work	3.2
Job security	3.1
Overall compensation	3.1
Base salary	3.0
Access to new technologies	3.0
Professional development & training	3.0
Advancement potential	2.9
Annual salary reviews (raises)	2.9
Family friendliness	2.9
Recognition/appreciation of your work	2.9
Leave (vacation, holidays, etc.)	2.9
Performance incentives/bonuses	2.8
Autonomy	2.8
Proximity to home	2.8
Job flexibility (work schedule)	2.7
Workload	2.6
On-the-job training	2.6
Increased scope of responsibility	2.5
Comp. time	2.4
Tuition reimbursement	2.3
Opportunity to telecommute	2.3
Industry	2.2
Stock options	2.1
Small company	1.9
Large company	1.9
Likelihood of company going public	1.7



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Per Site Aquisition Costs	SHORELINE	LEGACY PBX	NET SAVINGS
Equipment Network Upgrades	$30,000	$60,000	$30,000
Installation – Hard Costs	$0	$1,700	$1,700
Total Per Site Aquisition Costs	$30,000	$61,700	$31,700
Total Aquisition Costs (X16)	$480,000	$987,200	$507,200
Annual Costs			
Management	$39,600	$72,000	$32,000
Maintenance (Based on 10.1%)	$48,480	$129,280	$80,800
Long Distance	$30,000	$151,000	$121,700
TCO Per Year	**$118,080**	**$352,280**	**$234,200**
Total Over 5 Years			**$1,678,200**

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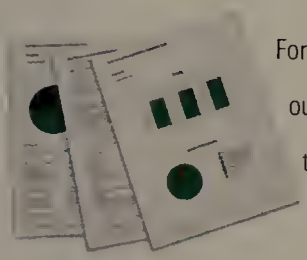

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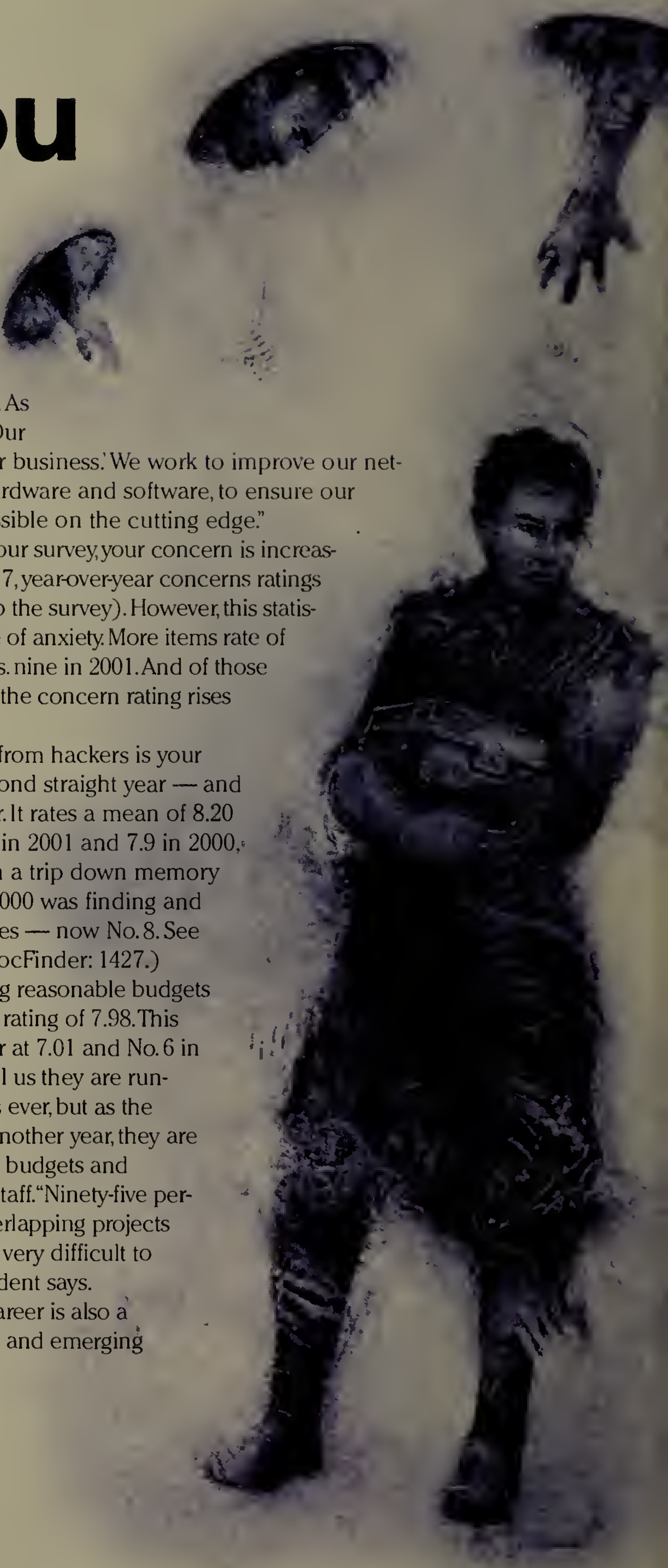
Your job

What's troubling you

Our annual Top Concerns survey reveals rising anxiety over project budgets, disaster recovery and your career.



By Julie Bort

Hackers and budgets and training and backups. These are a few of your most worrisome things. Or so you say in Network World's third annual Top Concerns survey.

With the help of market research firm Research Concepts, we asked 100 enterprise IT executives to tell us if they are most concerned about technology, employees, their careers or the health of the network industry. Then we asked them to rate their concern about 38 specific items, from acquiring business skills to XML. Respondents used a scale of 1 through 10, with 10 being the highest level of anxiety.

This year, technology is the undisputed area of highest concern, named that by nearly half of respondents (see charts). Management — which tied technology as the top general concern in 2001 and was the top concern in 2000 — gathered a quarter of the votes. The health of the network industry is the top concern of 15% of respondents and career garnered 11%.

Respondents who say technology is their No. 1 concern name these reasons: avoiding outages, especially from security breaches; managing technology's speedy rate of change; and implementing new systems. As one respondent explains, "Our motto is 'Your success is our business.' We work to improve our network infrastructure, both hardware and software, to ensure our company is as much as possible on the cutting edge."

Of the 38 specific items in our survey, your concern is increasing for 17 and declining for 17, year-over-year concerns ratings show (with four items new to the survey). However, this statistic belies your growing sense of anxiety. More items rate of major concern this year, 11 vs. nine in 2001. And of those 11, only one of which is new, the concern rating rises on eight (see chart).

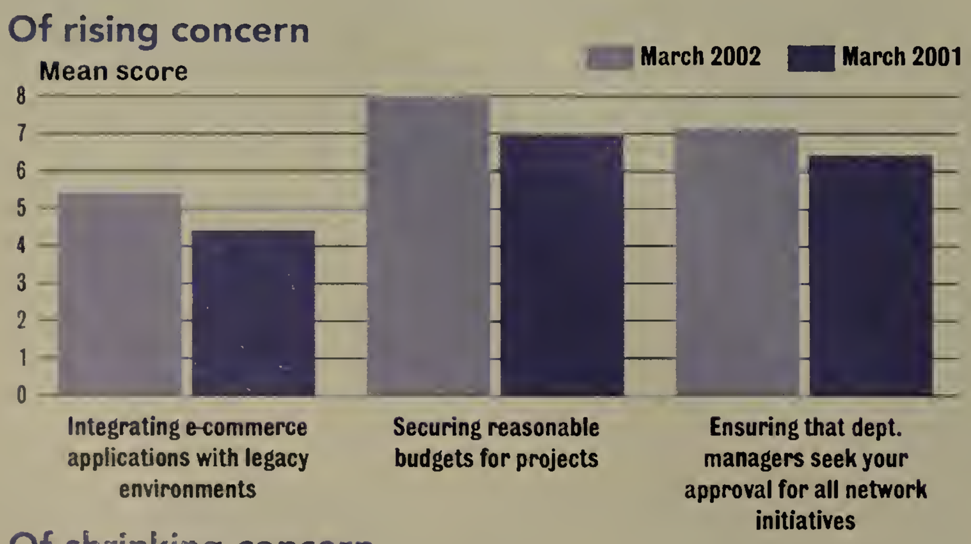
Keeping the network safe from hackers is your biggest worry — for the second straight year — and it scares you more than ever. It rates a mean of 8.20 out of 10, compared to 8.13 in 2001 and 7.9 in 2000, for which it ranked No. 4. (In a trip down memory lane, your top concern for 2000 was finding and retaining qualified employees — now No. 8. See story, www.nwfusion.com, DocFinder: 1427.)

A sign of the times, securing reasonable budgets is your No. 2 problem, with a rating of 7.98. This compares with No. 9 last year at 7.01 and No. 6 in 2000 at 7.66. Respondents tell us they are running just as many projects as ever, but as the economy staggers through another year, they are bound by more rigid project budgets and restricted from hiring more staff. "Ninety-five percent of the time we have overlapping projects and we are short-staffed. It is very difficult to meet deadlines," one respondent says.

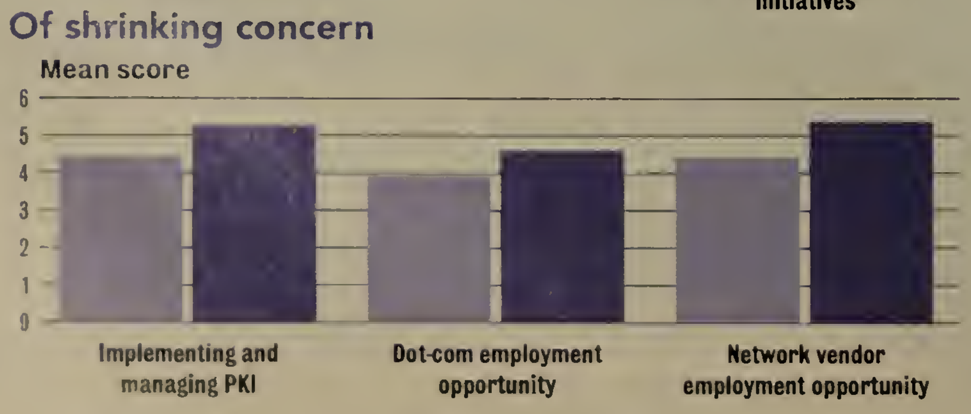
Higher anxiety over your career is also a trend. Acquiring skills in new and emerging

Of growing and shrinking concern

We asked respondents to rate their concern about 38 specific items on a scale of 1 to 10, with 10 representing the highest anxiety. Of these, four were new to the survey, 17 worry you more this year than last and 17, too, became less worrisome. The charts below depict the three items that rose most in concern and the three that dropped most. **(Visit the You portal on Fusion for the full lists at www.nwfusion.com/you2002/, DocFinder 9834).**



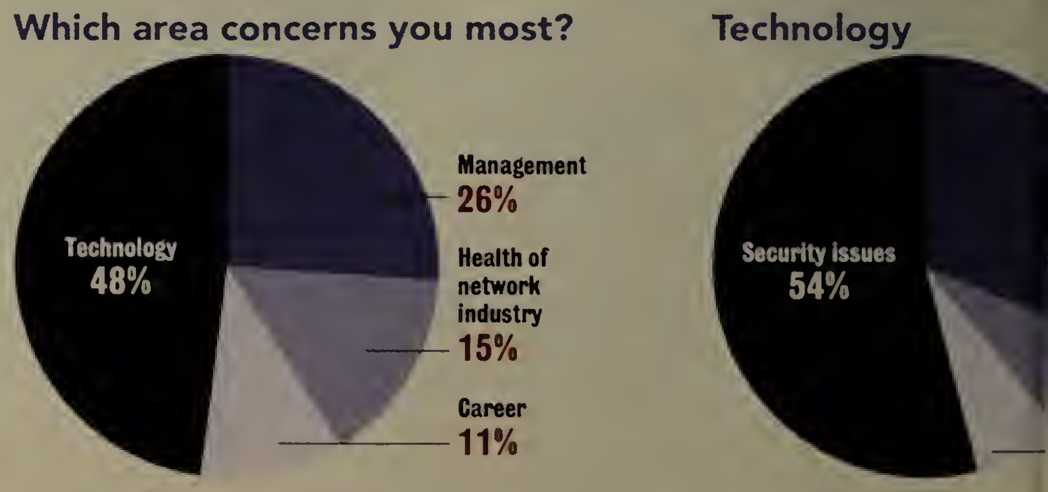
Of rising concern



Of shrinking concern

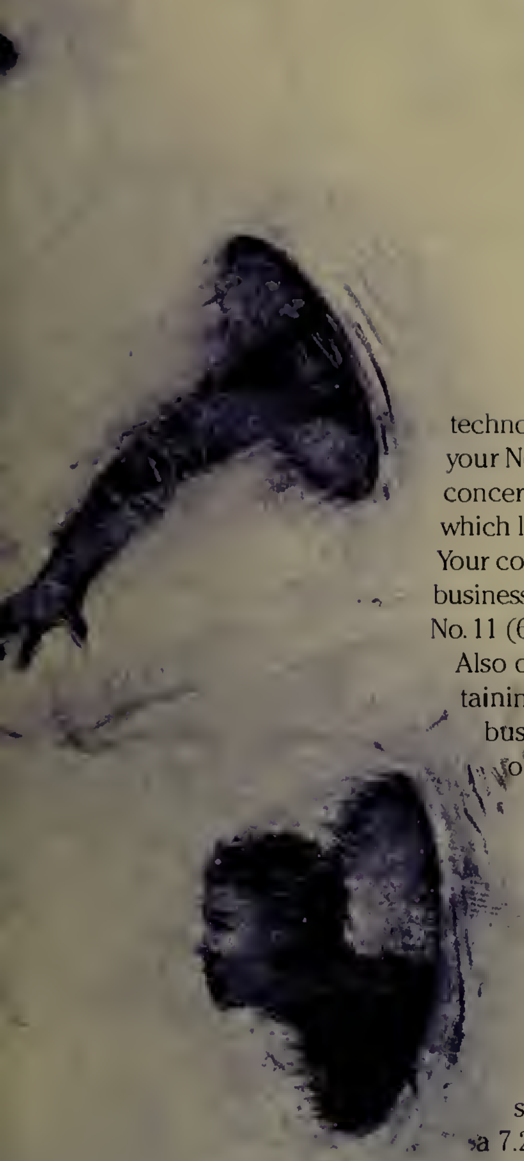
Your top concerns

When asked which of four general areas is the utmost concern, half of the 100 enterprise IT
deeper, respondents named the specific worries in both areas.



Which area concerns you most?

Technology



technologies — always important — steps up to be your No. 3 concern with a nearly two-point gain in its concern rating, a 7.88 compared to 7.70 in 2001, which landed it at No. 4, and 7.74 in 2000 for No. 5.

Your concern over acquiring and improving upon business skills, jumps seven spots to No. 4 at 7.51, from No. 11 (6.99) in 2001 and No. 8 (7.59) in 2000.

Also on the top 11 are career concerns over maintaining skills in established technologies, ensuring business-manager peers keep you in the loop on network-related projects and obtaining competitive pay. You've been successful at the latter, according to Network World's 2002 Salary Survey (see story, page 45). Explains one respondent: "You really need the [skills] development to help you move forward. The rest of it, like the salary, takes care of itself."

Concern about disaster-recovery and business-continuity procedures marks its survey debut by landing in the top with a 7.22.

Surprisingly, among the 17 items barely on your concern radar are many emerging technologies, such as converged networks, public-key infrastructure, supplier-management systems and XML.

The war zone this year comprises money, people and skills, the 2002 Top Concerns survey shows. Between budgets, career management and the ever-present threat of hackers, your favorite song this year is the bugler's call to charge. ■

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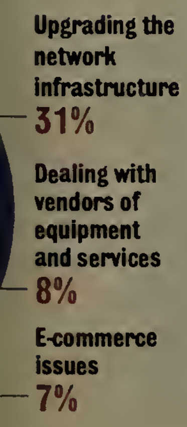
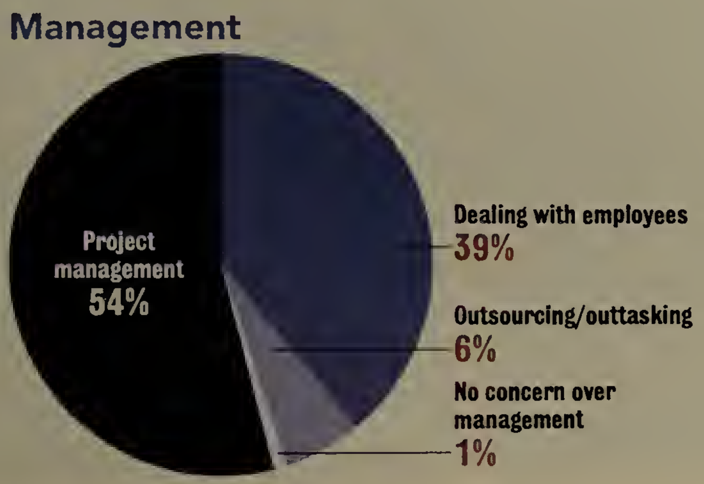
DocFinder: 1423

tives surveyed chose technology, followed by the pressures of being a manager. Delving





The concerns ratings

We asked 100 enterprise IT executives to rate their concerns on the following areas, using a scale of 1 to 10, where 10 represents extreme concern.

Of highest concern

	Item	Mean 2002	Mean 2001
1.	Making sure network is hacker proof.	8.20	8.13
2.	Securing reasonable budgets for projects.	7.98	7.02
3.	Acquiring skills in new and emerging technologies (QoS, VPNs, etc.).	7.88	7.70
4.	Acquiring and improving upon business skills.	7.51	6.99
5.	Keeping employees trained.	7.48	7.68
6.	Maintaining skills in established technologies, (routing, switching, etc.).	7.42	7.42
7.	Choosing between high pay and quality of life.	7.32	6.88
8.	Finding and retaining qualified employees.	7.23	7.72
9.	Disaster recovery and business-continuity procedures*.	7.22	n/a
10.	Synching with departmental and corporate managers, so that network-related projects proceed with your approval.	7.22	6.53
11.	Obtaining a competitive salary and benefits.	7.04	6.84

Of middling concern

	Item	Mean 2002	Mean 2001
12.	Costs of salaries/benefits for employees.	6.96	6.59
13.	Maintaining morale during a recession*.	6.95	n/a
14.	Defining reasonable scopes of work for projects.	6.82	6.59
15.	Career development opportunities at your current company.	6.72	6.43
16.	Implementing quality of service technologies.	6.38	5.92
17.	Security of service providers and/or outsourcer's network and systems.	6.12	6.15
18.	The career path generally available to you at user companies.	6.02	6.39
19.	Implementing scalable, manageable storage*.	5.97	n/a
20.	Having a reasonable number of qualified vendors from which to choose.	5.69	5.43
21.	Obtaining bonuses and stock options.	5.68	5.83
22.	Establishing Web services, including training and implementation*.	5.62	n/a
23.	Building remote-access and site-to-site VPNs.	5.59	5.90
24.	Integrating e-commerce applications with legacy network equipment and applications.	5.53	4.54
25.	Supporting wireless devices.	5.14	5.35

Of lowest concern

	Item	Mean 2002	Mean 2001
26.	Managing outsourced contracts, such as Web hosting services.	4.87	5.16
27.	Costs of outsourcing/outtasking.	4.87	5.24
28.	XML.	4.78	4.68
29.	Convergence of voice and data.	4.77	5.05
30.	Implementing and managing PKI systems (digital certificates, digital signatures).	4.51	5.16
31.	Finding outsourcers/outtasking that can handle the tasks you'd like to off-load.	4.45	4.76
32.	Building and maintaining supplier management systems, such as e-marketplaces.	4.43	4.15
33.	The opportunity presented by employment with a network vendor.	4.38	5.25
34.	Replacement of your network staff with outsourced services.	4.29	4.50
35.	Migration from 10/100 Ethernet to Gigabit Ethernet.	4.23	4.49
36.	Developing applications for mobile devices.	4.14	4.00
37.	The opportunity presented by employment at dot-com companies.	3.96	4.75
38.	Implementing and managing ASP services.	3.80	4.22

*New to the 2002 survey

SOURCE: NETWORK WORLD'S 2002 TOP CONCERNS SURVEY

Your network's future

Tight budgets make for tough decisions, but that shouldn't mean shortchanging investments in new technologies.

By Bob Violino

Heartened by signs that the economy may be on the mend, network executives hope tight spending restrictions will ease soon. But until then, they're continuing the strategy of doing more with less, and living with the reality that they need to make tough decisions on how to divide up the budget pie.

One of those tough decisions should be to keep spending on the future, according to analysts. Network executives must not shortchange investments in new technologies to concentrate only on current needs, experts say. Doing so risks missing out on business opportunities that will emerge as the economy improves.

Still, that's easier said than done. *Network World's* annual IT spending survey of 598 IT professionals (see www.nwfusion.com, DocFinder: 1325), conducted at the end of last year, showed that IT budgets for 2002 were expected to increase only 3.9% from 2001. Nearly two-thirds of the managers (65%) said their 2002 financial resources wouldn't be adequate to handle the tasks at hand.

But that doesn't justify a knee-jerk reaction to halt investments in newer technologies such as wireless communications, voice over IP, biometrics and quality of service (QoS). IT budget experts say no matter the economy, between 10% and 15% of IT spending should go toward new technologies.

The competitive edge

Carlos Leon, network operations manager at Contractors Register in Jefferson Valley, N.Y., stands as an example that spending on new technologies needn't decline in tough economic times. His company has continued to devote its typical 10% of IT spending to new technologies, he says. "There are risks of falling behind our competitors if we don't stay abreast of the latest technology," Leon says.

Contractors Register, which publishes building and construction directories and operates a Web portal for the construction industry, has continued to spend on QoS and remote monitoring services for its Web portal, Leon says. These technologies help to enhance security and ensure the site is always up and delivering timely information to customers and business partners.

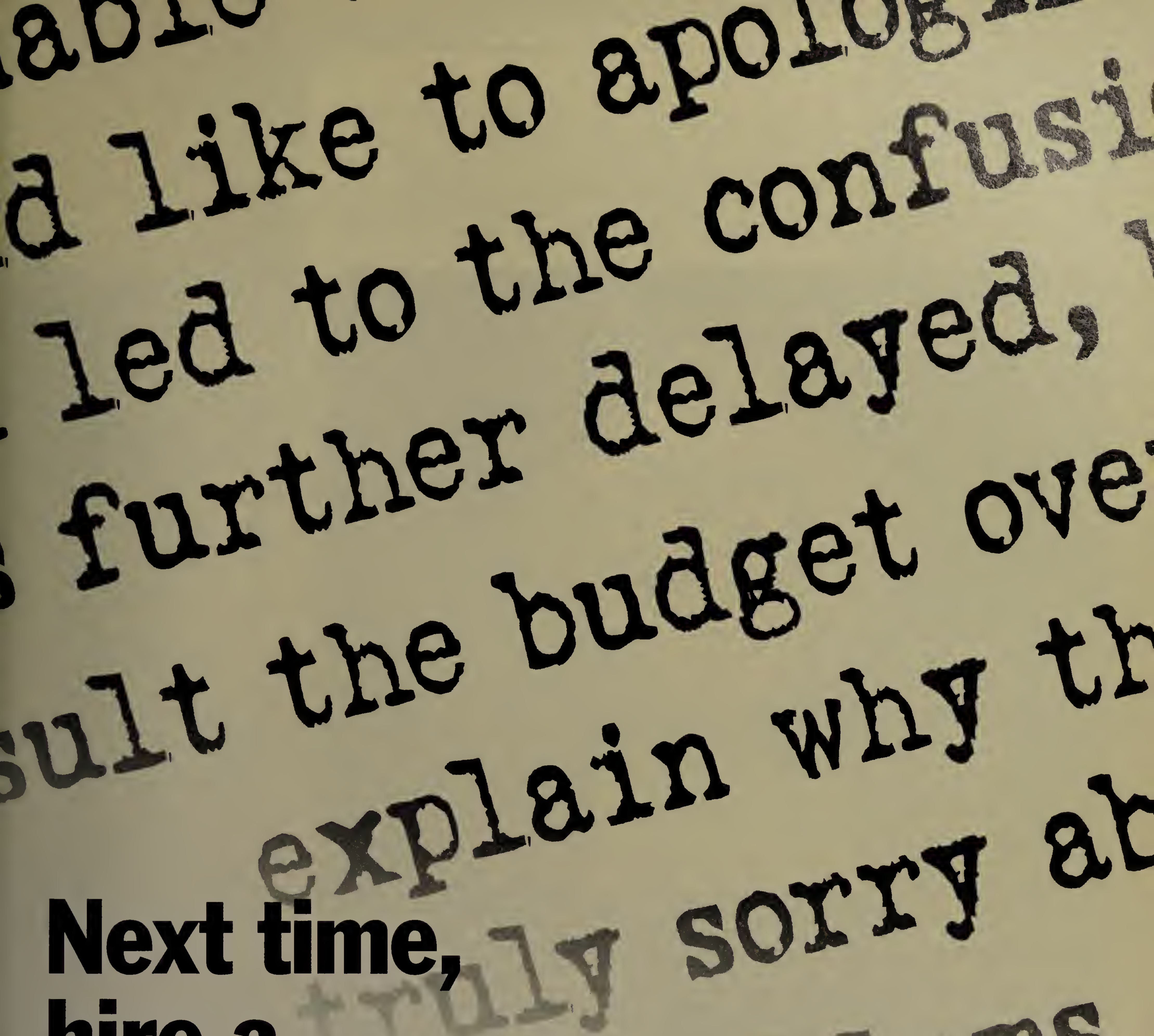
"We need to be proactive in getting remote monitoring, even on an hourly basis, so we can make quick decisions about how to improve the site based on the information we gather," Leon says. "If companies are going to partner with you, they want your site to be available all the time and they don't want it to be compromised [by security breaches]. That's critical if you're going to keep your credibility."

Another case in point is Countrywide Credit Industries, a financial services firm in Calabasas, Calif., Mark Brubaker, senior vice president of enterprise network services for Countrywide continues to green light testing programs because "technology changes so rapidly that if you don't keep a steady pace [of investing] you fall too far behind the curve and it's very difficult to catch up," he says. "It costs an incredible amount of money to augment your staff or to bring in consultants" to help get the company up to date in new releases or new network services, he adds.

Countrywide is looking at wireless for LANs and WANs — at least in alpha test programs — even though the technology is still in the early stages of development. "Wide-area wireless will provide

Carlos Leon, network operations manager at Contractors Register, sees big trouble in not spending on new technologies.

CATRINA GENOVESE



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immense value because we have a substantial outbound sales force," Brubaker says. "The technologies aren't at the level that we believe justifies a high expenditure, but we'll continue to look at wireless because it makes an incredible amount of business sense."

The financial services company also is integrating voice and data networks to reduce costs and gain scalability. "Larger pipes will allow us to run voice, data and video [on one network]," Brubaker says.

At Contractors Register, demanding users also keep IT plunging into new technologies, Leon says. The company has deployed wireless technology at its headquarters and has given field salespeople wireless handheld devices, largely because the representatives insisted they needed wireless access to important customer data stored in servers at the main office.

Leon also says investing in new technologies will keep IT staffers adequately trained on the latest developments.

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Tips for showing a return

Getting the money you need in these tight times means showing a great business case.

The U.S. economy may be on the upswing, but by no means have companies returned to the robust technology spending days that characterized much of the mid to late 1990s. When companies invest in network technology — whether it's been around for a while or just emerging from the lab — network executives must be prepared to show returns on the investment.

"We're a very cost-conscious company regardless of the state of the economy," says Mark Brubaker, senior vice president of enterprise network services at Countrywide Credit Industries, a financial services company in Calabasas, Calif. "We always drive expenditures to one of two things: increasing the bottom line or reducing costs of our operations. Everything we do is scrutinized."

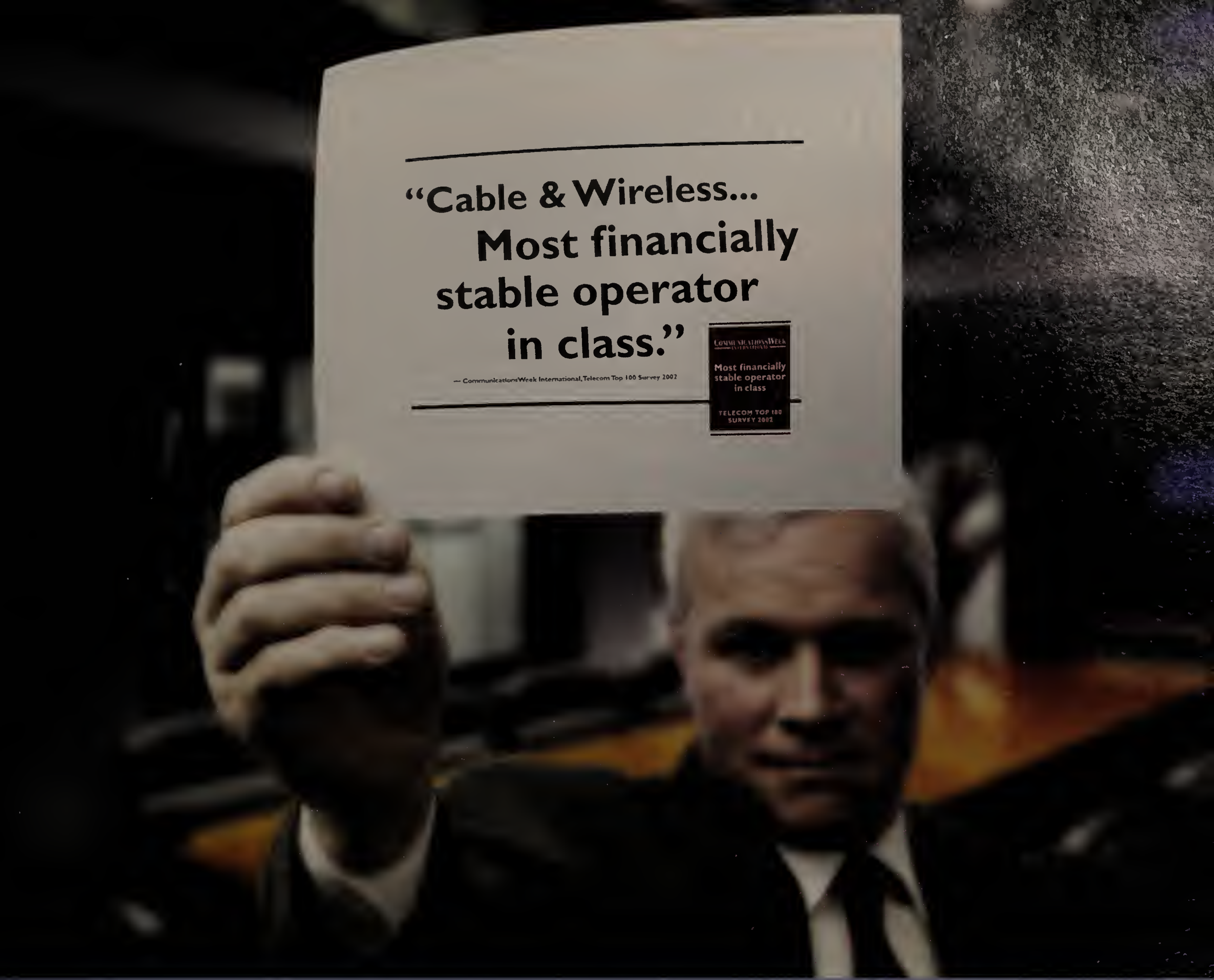
Brubaker says IT and network managers have to qualify their expenditures against the company's strategic goals and objectives. "I'm a firm believer that in 95% of companies, IT is still a cost center and not a profit center. The only way IT can contribute to the profitability of the company is by enabling profit centers within the company to generate more profits," he says.

Ed Mann, vice president of network technology at Prudential Financial, in Newark, N.J., says getting funds allocated is difficult unless a network technology can bring a near-term cost reduction or other measures of tangible financial return. "The technology has to show some kind of immediate payback," he says.

Mann is interested in deploying technology such as voice over IP, but must first develop a strong business plan. Prudential is focusing most of its efforts on disaster recovery and business continuity.

Technology managers "have to do a really good job of demonstrating the business value of whatever they do," adds Barbara Gomolski, research director at Gartner. "They need to develop some kind of metrics or systems that show the measurable returns of technology. They have to demonstrate the business benefits."

— Bob Violino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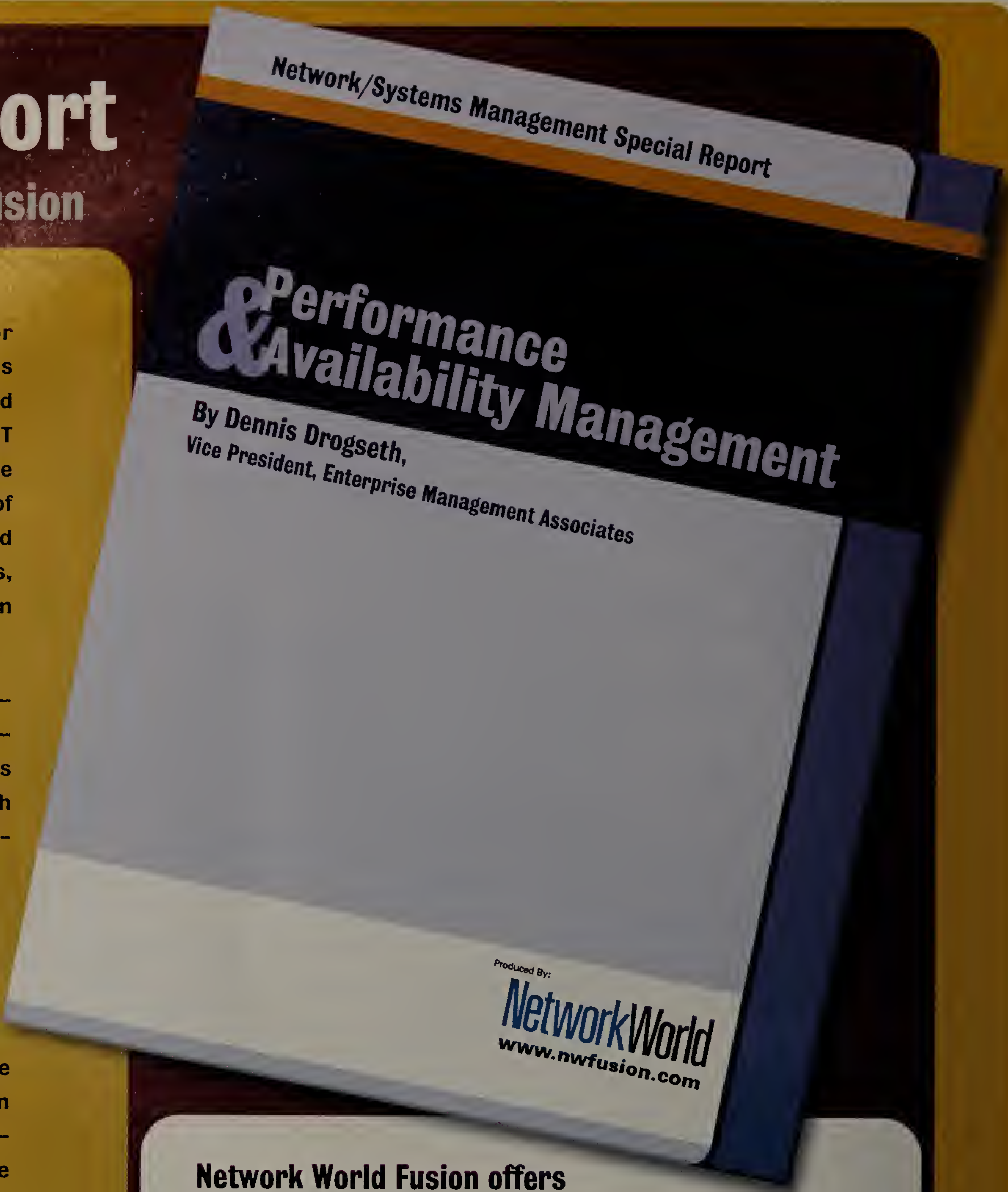
Special Report

From Network World Fusion

An effective strategy for ensuring high levels of performance and availability is the key to optimizing IT resources. Eliminating vulnerable areas and boosting the performance of the networked infrastructure will lead to enhanced business services, increased productivity and ROI on IT assets.

In this latest SPECIAL REPORT – exclusively from Network World Fusion – well-known Networked Services Management Authority Dennis Drogseth covers the do's and don'ts of performance and availability management.

Dennis Drogseth is a Vice President with Enterprise Management Associates (EMA). He leads the Networked Services Management practice areas, which span performance availability and service management across enterprise and telecommunication markets. Drogseth is also a featured columnist of Network World Fusion's Network Systems Management newsletter and has authored numerous articles in Network Magazine and Business Communication Review. With EMA, he has helped IT organizations grapple with complex process, organizational, SLA, design and product selection issues relevant to optimizing infrastructure performance.



Network/Systems Management Special Report

Performance & Availability Management

By Dennis Drogseth,
Vice President, Enterprise Management Associates

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This, in turn, will help you retain your top people, says Barbara Gomolski, research director at Gartner. "If you do boring stuff, you're not going to hold onto your hot talent. Most of the technology stars get bored and leave. It's worth staying with leading-edge technologies because they are what the best people are intrigued by."

Among the technologies Gomolski says are worth investing in are those for wireless networks; security, including biometrics; business continuity; distance learning; streaming video; and telecommuting. "You want diversity, like you would with any investment portfolio," she says.

Despite these days of tight budgets, if you view IT as strategic, then you are not only justified, but obligated, to dedicate funds to what Gartner calls "frontier" technologies — those likely to benefit the company in the near term. Certainly, your competitors are continuing to invest, albeit not always at the recommended ideal of 10% to 15% of the IT budget. Still, a survey of 600 large companies Gartner conducted in mid-2001 showed that, on average, companies were devoting 7% of their IT budgets to frontier technologies. A similar study showed average spending of 11% on frontier technologies in 2000. "That's a small percentage to put toward emerging technology," she says.

Squeezing out funds

Network executives "need to squeeze operating expenses as much as they can so they can finance new technologies," Gartner's Gomolski says "For example, by squeezing money out of telecommunications services, they can fund new software development."

The goal is to make short-term, budget-conscious decisions that will see you through tight spending periods while preserving your ability to research and deploy new technologies.

Start by looking for creative ways to cut existing costs or trim rising expenses. Countrywide purchased burstable circuits rather than fixed bandwidth from its ISP to slash Web access costs. "Rather than pay at the high water mark all the time, we're paying on a usage basis," Brubaker says. "We're doing similar things with the rest of our infrastructure wherever appropriate." (He declined to specify the amount Countrywide has saved through these measures.)

Good network-usage forecasts also can have a positive budget payback. They can help identify ways to slow or stop rising expenses. "We try to determine what our core network should look like in 12 months by looking at trends from the past," Brubaker says. "We also keep in close contact with our [software] developers to see what they're doing with applications. Can we redesign an application to limit having to buy additional bandwidth and components?"

Other users say they continuously look for ways to drive infrastructure costs down, such as using less-expensive alternatives to wide-area frame relay and shifting the cost of remote access to the Internet for employees who work at home.

Leon of Contractors Register advocates due diligence when making decisions on how much to invest in new technology. "Approach things that have brought you success in the past, from a budgetary standpoint and a timing standpoint. If you've been successful up to now and your approach has been sound, continue doing the same thing," he says.

Violino is a freelance writer covering business and technology. He can be reached at bviolino@optonline.net.

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Our annual foray into the unusual places you work takes us to "Monsters, Inc.," creator Pixar Animation Studios, NASCAR racing team Hendrick Motorsports and the 2002 Super Bowl champs, the New England Patriots.

A monster network

Pixar's Unix Lizard helps deliver Hollywood blockbusters.

By Linda Leung

Entering the world of Pixar Animation Studios is like stepping into a movie scene. The lawn is vast and immaculate, the cars in the parking lot gleam, and the sun warms the atrium reception where life-size models of Mike and Sulley, the comical monsters from the company's hit movie "Monsters, Inc.," greet visitors with their lovable smiles.

The idyllic setting even extends into the IT department.

Sitting in a stylishly ergonomic Herman Miller chair, wearing jeans and sweater, IT executive Peter Kaldis chills out to the Depeche Mode tune emanating from his sound system. Kaldis is a self-styled "Unix Lizard" (he says so on his business card). He is calm and collected despite the pressure he faces fixing bugs and upgrading systems so Pixar's army of animators can use them full throttle in production of the studio's next project, a feature film called "Finding Nemo," about a fish family.

Working through stressful times is nothing new for the laid-back Kaldis, who has seen his share of film production during his five years with Pixar. The 36-year-old Unix and network expert oversees the studio's Cisco 6500-based Gigabit Ethernet-ready backbone plus its showcase Renderfarm. The latter is a throbbing mass of 210 Sun Enterprise 4500 and 40 Sun Fire 3800 servers that do the compute-intensive work of applying correct lighting, textures and shading to 3-D computer images. It took the power of all those machines to make Sulley's blue and purple fur look, and act, so lifelike.

Kaldis, a 10-year industry veteran who hails from Montreal, moved to northern California for the job at Pixar, in Emeryville. He had managed Unix systems at Softimage, a 3-D animation software company once owned by Microsoft. "I was managing Unix at a Microsoft company, so you can see why I left," he jokes.

Kaldis oversees a team of 15 desktop and hardware specialists. They support an eclectic group of 400 people, from developers who write software for Pixar's animation and rendering systems to artists and technical directors who work on movie production.

Pixar, also known for movies such as "Toy Story" and "A Bug's Life," wants to cut production of feature-length animations from two years to one. For Kaldis, that means pushing Gigabit Ethernet to the desktop and to the Renderfarm machines, now all served by 100M bit/sec links. He is piloting Gigabit Ethernet at about 20 desktop machines that animators and technical directors use, but has yet to test it extensively. He would like to upgrade to Gigabit Ethernet by year-end, though.

"The real big win for us . . . will be in our Renderfarm. Those machines are a lot more bandwidth-hungry [than the desktops]," he says.

Kaldis otherwise has been occupied migrating from Solaris 7 to 8, upgrading the Lightweight Directory Access Protocol server and adding operating system and driver patches to all the Linux desktop workstations.

Kaldis says the best parts of his job are access to new technology, such as Pixar's state-of-the-art film laser scanner that takes digital images and records them onto film, and working with tech-savvy people. But the latter has its drawbacks. "We get to interact with some smart people who can test and create new technology. The bad is that we end up being the support organization [for that technology], and that support [role] has to be large," he says.

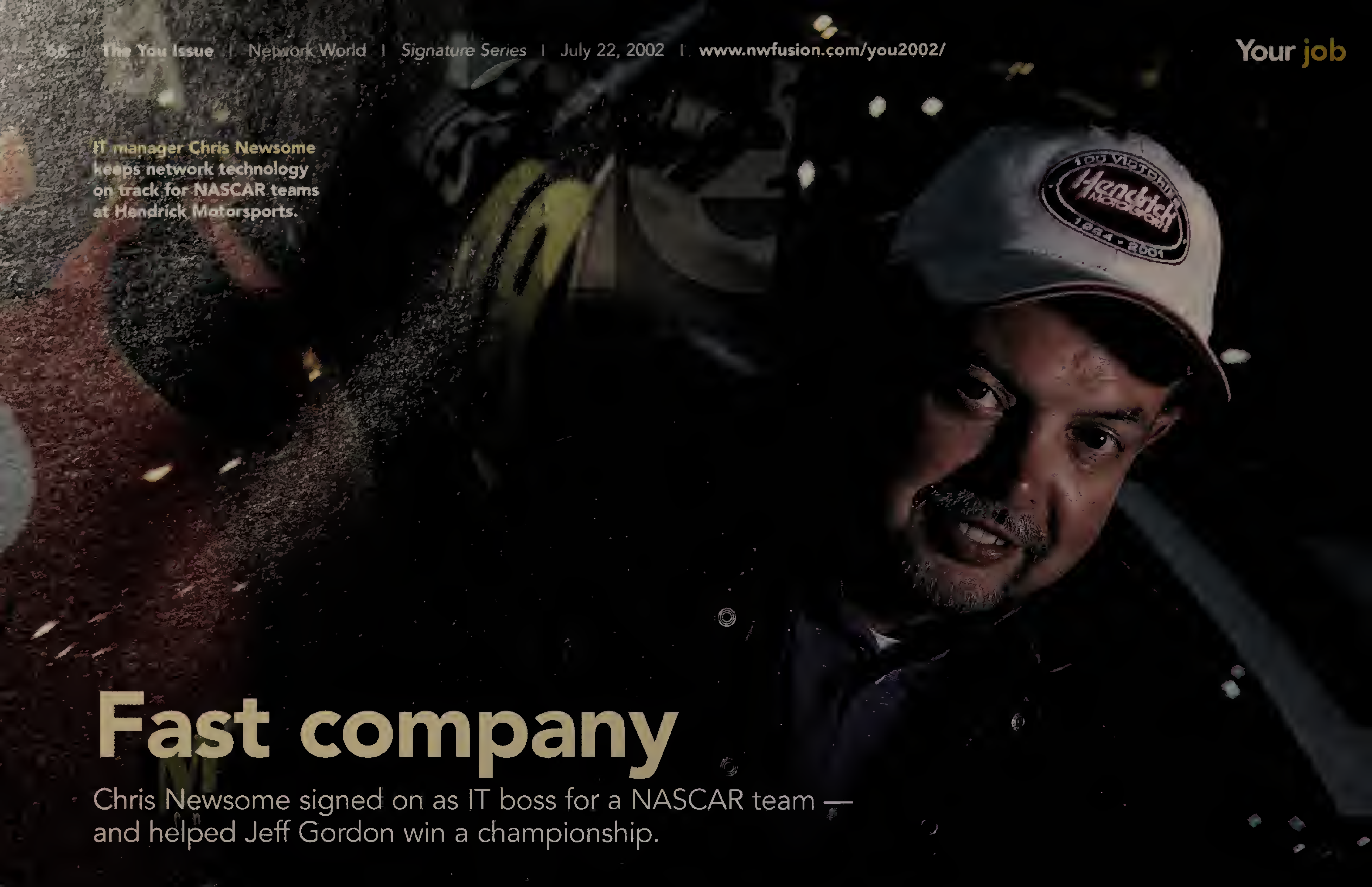
Having creative people around keeps the workplace visually exciting, too. Some employees have painted murals in their offices and others have decorated their doors — one is done up as the outside of a cozy home, complete with white picket fence, and another resembles a military bunker. Even the corridors are wildly furnished with chandeliers, sumptuous velvet sofas, miniature golf courses and a 1970s disco-style beverage bar.

Pixar encourages Kaldis and his colleagues to develop their creative sides by offering art and sculpture classes. "I like to dabble with art," Kaldis says, modestly. "I have taken introduction to drawing and want to take the sculpting class, but haven't had the time."

If not art, then maybe acting.

Sometimes Pixar employees get the chance to lend their voices to animation characters before professional actors are hired. Would Kaldis be interested? "No, who would want to record my voice?" he asks. Who knows, his knowledge of a French-Canadian accent might one day prove just the right touch for a Pixar character. ■

Mike, Sulley and Pixar IT expert Peter Kaldis network over coffee.



IT manager Chris Newsome keeps network technology on track for NASCAR teams at Hendrick Motorsports.

Fast company

Chris Newsome signed on as IT boss for a NASCAR team — and helped Jeff Gordon win a championship.

By Steve Ulfelder

Chris Newsome nudges a visitor and says, softly, "Look at that. Right there." He's pointing at a 4-foot-tall trophy that sits in the Hendrick Motorsports Museum in Charlotte, N.C., a long straightaway down the road from Lowe's Motor Speedway — the epicenter of NASCAR racing.

The trophy belongs to Jeff Gordon, NASCAR's biggest star. It marks his 2001 championship in Winston Cup, NASCAR's premier division. It sets on a stand that lists Hendrick's 380 employees. That's what Newsome is pointing at — his name.

As Hendrick's IS manager, he is part of the team that won one of the sporting world's biggest championships. In his first season, no less. Newsome, 41, came to Hendrick in January 2001 — just in time to help Gordon win his fourth Winston Cup.

A lifelong North Carolinian, Newsome says, "I was a NASCAR fan, but not a huge fan" before he came to Hendrick. Baseball was actually his sport; a pitcher with a solid Roger Clemens build, Newsome played junior college ball and earned tryouts with the Cincinnati Reds and Toronto Blue Jays. But as his professional baseball dreams faded, Newsome took an entry-level computer operator job in 1981 — and gave birth to his IT career. (His baseball days lived on: until recently, Newsome played in an international 30-and-older league, and his team won the league's World Series in 1992.)

Before Newsome came on board at Hendrick, power users — dozens of world-class automotive engineers — were outstripping the IT organization. They were producing vast spreadsheets of test data but were crippled by a lagging infrastructure that prevented them from fully exploiting the information. Each of the campus' 13 immaculate buildings featured a rat's nest of cabling that didn't suit the state-of-the-art milling machines, engine dynamometers and other equipment used in building race cars. Because Hendrick lacked a cohesive network infrastructure, engineers had to jump through hoops to download and share data.

Newsome moved to standardize on IBM servers and Cisco network switches for the campus' 10/100M bit/sec LAN; until then, Hendrick used servers and switches from a handful of vendors. Newsome says the shift was a no-brainer move to trusted vendors.

Security was his top priority. "There are people who'd give a lot for the data that rides on this," he says, patting a server. "And we stop eight viruses a day at the firewall," a Cisco PIX 515. Hendrick also uses GFI's Mail Essentials antivirus and e-mail filtering software.

The second priority was a wireless LAN for use at the tracks. In addition to Gordon, Hendrick fields Winston Cup competitors Terry Labonte, Jimmie Johnson and Joe Nemechek, and two racers in the Busch Grand National division, NASCAR's equivalent to Triple-A baseball. Because NASCAR limits teams' test time, multicar organizations such as Hendrick gain an advantage by sharing test data. Until recently, that meant engineers had to crowd around servers in the garage, competing to copy information to diskettes for use in their laptops.

Now each team has a transporter (a cross between a motor home, a trailer and a garage on wheels) in which Agere Systems wireless LAN access points and cabling are installed. At each trip to the track — 36 races plus seven test days per year — a globetrotting IT technician raises the transporters' wireless antennas, then roams the track to test signal strength. Newsome says he relies on Service Set Identifier to make sure no competitors, which have wireless LANs of their own, eavesdrop on Hendrick traffic.

Hendrick engineers love the wireless LAN because it untethers them from the servers in their often far-flung garage stalls. Now Gordon's crew chief can haul his laptop over to Labonte's garage, which may be a quarter-mile away, to share data. Moreover, specialist engineers (engine experts, for example) can gather data from all four Hendrick cars without scrambling for server time.

Newsome makes leading this unusual IT operation look effortless. He uses the same deferent tone whether addressing his IT team of six or a company receptionist. The closest he comes to bragging is when he discusses the organization's Bible Study group. "It started with half a dozen people. Now there are 50 or more of us every week," he says proudly.

And it's hard for Newsome to find a downside to his job. Not even the pressure of NASCAR, a multibillion-dollar sport fueled by sponsors who demand results each race, fazes him. Maybe pitching has inured him to all that. "Pressure? I don't really feel it," he says. "There's no pressure as long as you deliver."

Ulfelder is a freelance writer in Southborough, Mass. He can be reached at sulfelder@yahoo.com.

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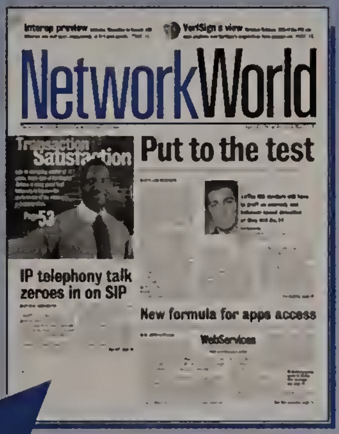

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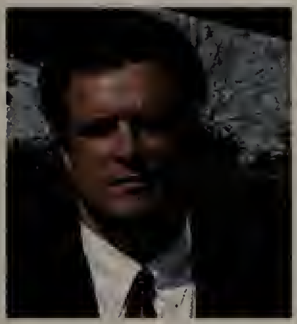

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Network of champions

The New England Patriots' IT director scores big with new stadium network

■ By Joanne Cummings

When the New England Patriots won Super Bowl XXXVI, most football experts were incredulous. How could a team with so few stars emerge victorious?

The win took good old-fashioned teamwork, something the Patriots' IT director, Pat Curley, knows well.

Curley's staff of four spent that February day working, and then celebrating, in New Orleans. Curley reluctantly admits she missed the revelry. "I was homesick, but I watched the game on TV and cheered right along with everyone else," she says.

That Curley wasn't lying around feeling sorry for herself underscores how she approaches her job managing IT for the Patriots and for the rest of the Kraft Group holdings — the New England Revolution soccer team and paper and packaging companies Rand-Whitney Group, Rand-Whitney Containerboard and International Forest Products (IFP). She focuses on reliability, excellence and lots of hard work — out of the spotlight.

"It's not the glamour of sitting on the bench with players," she says. "We're here to support the press boxes, the NFL statistics staff and whoever else needs it. We don't watch the game — we're working."

In fact, she recently got the $1 million voice and data network for the Patriots' and Revolution's new venue — CMGI Stadium in Foxboro, Mass. — up and running, on time and on budget.

Since joining the Kraft organization three years ago, Curley had worked out of the company's headquarters in Boston. But once CMGI Stadium became operational in May, she moved into an office there. Curley likely won't miss a beat not being at the corporate site — not unless she loses her BlackBerry. She's addicted to it.

"This is like gold," she says, showing off her mobile e-mail device from Research In Motion. "I bring my BlackBerry to every meeting, and even before the meeting is over, I can assign every action item," she says, deftly "thumbing-out" an e-mail. "It's the best time-saver."

The stadium is just the place for Curley, a die-hard New England sports fan. "I've been following the Patriots since the days of Gino Cappelletti," says the native New Englander. (Cappelletti played for the Patriots from 1960 to 1970 and is still the team's leading scorer.) In the summer, she turns her attention to baseball. "I love the Red Sox," she adds.

But the sports connection isn't the only draw for Curley. "Honestly, the attraction of my job is its breadth. It's a dream job for somebody who likes dabbling across various disciplines," a definite plus for someone with Curley's energy and drive. Curley, a business and technology generalist, received her undergraduate degree from Northeastern University and an MBA from Boston College. The job, she says, "requires pure network admin here at the stadium, but I also get to see the distribution end of things with IFP, and the manufacturing world with Rand-Whitney [Group] and Containerboard," she says.

Curley loves the challenge. "I thrive on variety and a nonrepetitive work life," she says. "If you like and need structure in your life, this is not the job for you."

Curley's pride is the network at CMGI Stadium, a 68,000-seat venue.

CMGI's Gigabit Ethernet backbone uses Nortel Business Policy edge switches and a few Nortel Passport core switches, all managed by Nortel's Optivity network management system. CMGI has 80 suites networked together on one LAN and boasts more than 2,000 100M-bit/sec ports that can be networked.

The suites are available not just on game day but throughout the week to handle conferences and other gatherings. Suite visitors get Internet access via dedicated T-1 connections, Curley says.

"No other stadium has this setup. It makes it very exciting, and very challenging," she says.

Curley's team also designed and implemented LANs to support the various scouting and coaching systems, and more typical corporate applications.

The scouting system is based on Pinnacle's Scorpion, Curley says. "The scouts have notebook computers, and when they go and look at prospects, they check out standard stats and criteria, and register their comments," she says. "Those comments are then uploaded into a central database here so that the coaching staff can see who is available."

The coaching system stores digitized game video that coaches can use to watch certain players or plays.

The football systems eat up a lot of bandwidth and run on a separate LAN from the traditional administrative functions, she says.

"We've designed everything to be separate so that people who need Internet bandwidth, such as the suite users and press, will have access but it won't conflict with or steal our bandwidth. Plus, it's more secure."

Like the Patriots, Curley says the stadium network is poised to be successful beyond what most imagine possible. "People have been hearing this is a spectacular facility," she says. "It's definitely going to live up to the expectations."

Cummings is a freelance writer in North Andover, Mass. She can be reached at jocummings@attbi.com.

Pat Curley, IT director for Patriots' owner Kraft Group, can't wait for the Super Bowl champs to play at their new stadium and use the new network she oversees.

The YOU issue

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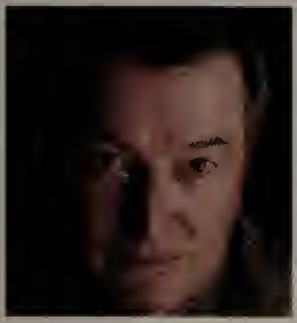

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BRUCE HERSHEY

Network manager David Sanders of J&A Advertising in his birdman skydiving suit.

Your derring-do

Skydiving, firefighting, snowboarding — these daredevil activities aren't just hobbies for three network professionals. They teach valuable lessons for the job.

By Julie Bort

Those who perpetuate the stereotype of the cowardly computer nerd never spent time with network professionals. Networking is a thrill-zone job. Yet for many of you, the workweek is only an appetizer. With the weekend comes your daredevil hobbies such as skydiving, firefighting and snowboarding. Such activities, enthusiasts say, mesh with the network profession by boosting confidence and troubleshooting skills.

The birdman

Perhaps no one personifies the daredevil network professional better than skydiver extraordinaire David Sanders, a network manager for J&A Advertising in Hollywood, Calif. In his 11 years of skydiving, the 44-year-old has accumulated some 1,500 jumps and countless stories — such as the time he and his buddies soared past their landing spot (and ride home waiting there) only to touch down miles away in a vacant lot across the street from one of the jumper's homes and his accommodating pick-up truck.

Sanders, who holds master skydiver and jumpmaster certifications, could teach but prefers the varied jumps these high-level licenses allow, like the high altitude/low opening (HALO) jump. A HALO jump uses specialized gear, including oxygen, for jumps at 30,000 feet, rather than the typical 12,000 feet. In another jump, he wears a birdman suit with webbed arms and legs. The suit transfers speed to forward motion, so a "free fall" that would normally take 50 seconds at 125 mph lasts about 2 minutes at 50 to 70 mph, he says.

"No matter what level you are at, there are always challenges — always more to the sport, more to experience, the ability to refine your skills," he says.

Still, Sanders seeks new ways to get that "ground rush," he says. Bungee jumping and wing walking are two of his other diversions. For the latter, he dons a parachute, steps onto the wing of a glider in flight, then walks or sits until he leaps — or falls — off.

Such sports are not sheer craziness, Sanders says. Training, technology and back-up plans keep the danger in check — much like on a network.

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"On the surface it seems a little wild, but it's very controlled," he says. "Being an 'adrenaline junkie' ties into troubleshooting ... there's always Murphy's Law — like in networking. You deal with what's in front of you and progress logically. You learn if you train properly, you can handle any situation."

Flame resister

Pagers adorn each of John Van Lanen's hips. Beeps from one means trouble at work. He is the manager of network operations for Tri-County Computer Services Association in Wooster, Ohio, the IT department for 19 school districts in three counties.

Beeps from the other means bunker gear, ladder trucks and physical heroism. Van Lanen, 39, is a volunteer firefighter and an assistant chief at that. For 17 years, he has protected the 7,500 people and 60 square miles of the rural farming community where he lives. He has rescued people from burning buildings, extracted bodies from crashed planes and secured overturned tankers.

Fires are common in his area and particularly dangerous because farmers often store explosive materials in or near their barns. A few years ago, a 100-pound propane tank blew up during a barn fire, Van Lanen remembers. Another time at a hog farm, a 20-pound propane tank exploded 50 feet away from him.

"I looked at it and thought, 'That's kind of cool' while the rookies had to go home and clean their shorts," he laughs. "No doubt about it, we are adrenaline junkies . . . we're tempting fate."

Firefighting helps Van Lanen be a better network executive, and vice versa, he says. "Talking to someone whose barn just burned down is like talking to someone whose network just crashed," he says. "You attack datacom problems like you attack a fire. You go through a certain set of procedures to solve a problem, and you do a lot of preplanning."

Snow acrobat

Not rain, nor sleet nor broken bones will keep Tami Tucker from her snowboard. In the six years since Tucker, 40, learned to ride, she has developed a need for speed, jumps, the rail and half-pipes.

"I love it. There's nothing like flying down the hill and going as fast as you can. The adrenaline, the freedom," she says.

Tucker, IS manager for public-opinion pollster Moore Information in Portland, Ore., rides every weekend at one of the half-dozen terrain parks near her, from the first big snow through the rains and slush of spring. Trick boarding is risky, but injury doesn't faze her. Last year she broke her arm, dislocated a shoulder and snapped her collarbone, twice. This year, she smashed the bone in her right wrist doing "grinds" — jumping onto a metal rail, sliding and jumping off. Then she broke her left arm during a speed run.

Typically, a miscalculated jump doesn't cause injury. But, she says, "I have had my share of spectacular falls — cartwheel falls and the like."

Tucker says her sport has taught her to remain cool under pressure on the job, even when others are panicking. "It has to do with confidence," she says. "I always have a feeling that there isn't anything I can't fix, or anything I can't do, and that comes from riding." ■

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Other techie daredevils

From kayaking with sharks to racing motorcycles, more industry professionals share their free-time bravado.

Techies with daredevil hobbies are hardly the rarity.

Your compatriots on the other side of the negotiation table, working for vendor organizations, have their share of derring-do, too. Mary Nugent, a vice president at BMC Software, spends her free time kayaking in the shark-infested waters of the Gulf of Mexico, about an hour's drive from her Houston home. She once faced down a 4-foot-long shark stalking her as she paddled.

On the other side of the planet stands mountaineer Alan Arnette, general manager for Hewlett-Packard's Digital Workplace Services. Arnette climbed Mount Everest in April, driven by his philosophy of exploring personal boundaries, he says.

Motocross racer Randy Rector, manager for a WorldCom enterprise services marketing unit, has experienced his share of thrills since he began riding motocross at the age of 4. If he's not on the track at a regional or national event, he's preparing his bike and equipment for the next race, he says. Mark Green, a contract project manager for BEA Systems, is experiencing firsthand the danger of motocross racing. Although a seasoned competitor, earlier this year he broke his femur and tore a knee ligament in an accident at a race in Hollister, Calif. But he'll be back on the track soon, he vows.

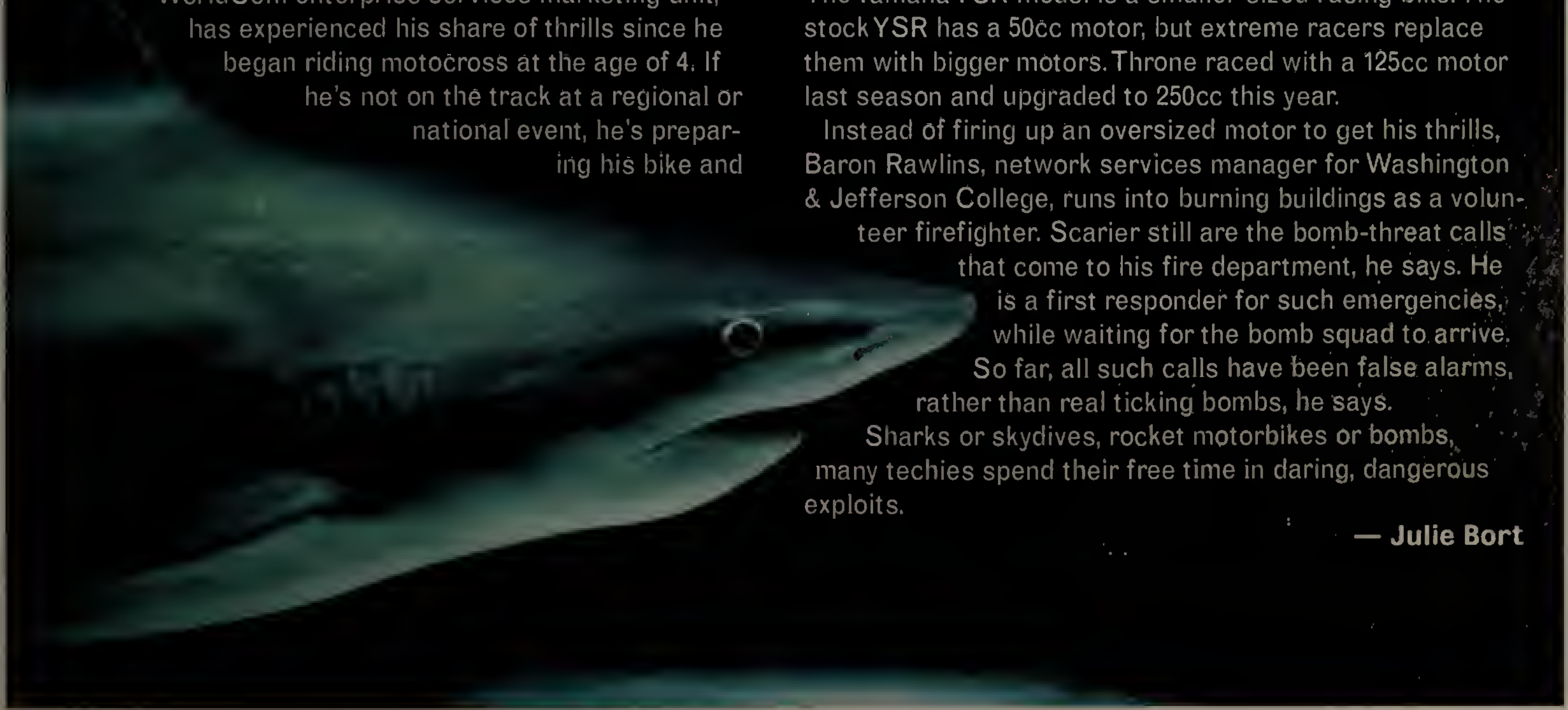
Techies seem to have a partiality for motorcycles. Ryan Vaughn, network operations center technician for ISP Rockynet, uses a Yamaha sportsbike for his daily commute. If he's heading out for a client installation, he'll strap a router to his back, he says. But that's work. For play, he's learning to pilot a plane and skydive.

The need for motorcycle speed isn't limited to those who work for vendors. Users such as Marc Throne, systems analyst for law firm Oppenheimer, Wolff & Donnelly, engage in what's known as "extreme YSR" motorcycle racing. The Yamaha YSR model is a smaller-sized racing bike. The stock YSR has a 50cc motor, but extreme racers replace them with bigger motors. Throne raced with a 125cc motor last season and upgraded to 250cc this year.

Instead of firing up an oversized motor to get his thrills, Baron Rawlins, network services manager for Washington & Jefferson College, runs into burning buildings as a volunteer firefighter. Scarier still are the bomb-threat calls that come to his fire department, he says. He is a first responder for such emergencies, while waiting for the bomb squad to arrive. So far, all such calls have been false alarms, rather than real ticking bombs, he says.

Sharks or skydives, rocket motorbikes or bombs, many techies spend their free time in daring, dangerous exploits.

— Julie Bort



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Grooming your successor

Some of the sharpest IT executives today have formal succession plans in place. Should you?

By Mark Kindley

Even the most recalcitrant network executives have to accept change — an admired colleague gets a well-deserved promotion, an underling takes a job elsewhere, the department is downsized and responsibilities shift. As the speed of change increases, the more apparent it becomes that having successors at the ready is as important a responsibility as providing a secure enterprise network.

The concept of succession planning is straightforward enough: As individuals move up — or on — they leave voids that usually need filling. But because everyone is different, succession planning is as complex a set of variables as you'll ever be challenged to compute. It isn't just about replacing the top people. It's about the future of employees in an organization.

Succession planning brings an obligation — identifying your replacement — and an opportunity — taking more control of your future. Indeed, succession planning is another indication that IT executives with management and business skills are in demand. These people are increasingly in succession plans for top-level corporate positions.

Chris Moody is a case in point. Moody joined Aquent as CIO in 1999 and, in 2001, advanced to COO of the global employment services firm in Boston. Succession planning isn't just a condition of his own advancement, he says. It is an integral part of managing his company and his career.

"You should always be succession planning," he says. "We have that now as part of performance management responsibility: Get training in Windows 2000, make sure procedures are well documented, ensure back-up systems are in place and provide for your own successor."

Not everyone likes the idea. Moody says he has gotten pushback from people who worry about job security and think they are more valuable if they are the only people who know their jobs. Moody suggests countering that attitude in two ways. The department should show that it values employees who take responsibility for succession planning. The other way is to point out to employees that if they don't know who can handle their jobs, they are putting the company at risk and underperforming. "That's the hardline," he says.

COO Chris Moody of Aquent says succession planning is vital to managing his department.

SHAWN HENRY

Taking it to the Extreme

Jeff Orton, CIO of Wilsons Leather in Brooklyn Park, Minn., spent many years at General Electric, where he says succession planning was part of the culture. "It was the extreme data point. You had no worry about your career at GE. You didn't do a lot of thinking, either," he says.

Orton takes a less structured approach at Wilsons, partly to provide his staff more flexibility but also because his staff — like most organizations smaller than GE — is too thin to have successors lined up behind everyone.

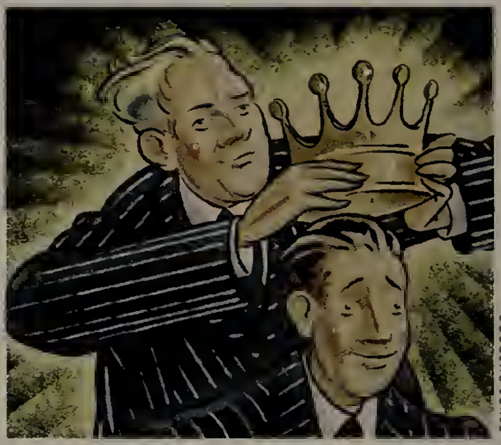
Orton identifies two keys to managing succession planning. You must talk openly with employees about their potential (and how to live up to it), and you must develop recognized measures that are applied uniformly to support succession decisions. Some of these measures identify levels of technical expertise. Others rate less easily calibrated attributes such as communication skills and attitude.

As succession planning becomes an established discipline, the power to decide who succeeds whom stops being a dark science practiced behind closed doors. It becomes an open system of evaluation that includes recognized measures of accountability and performance, says Nancy Monson, a senior consultant with the Hagberg Consulting Group. Succession planning also systematically reinforces the cooperative and collaborative attitudes that are increasingly recognized as the characteristics of good leaders.

"The speed of change and the risks involved have made it necessary to have a more objective and systematic way of managing human capital," she says.

"The better we all get at this, the less personal it becomes," Orton says. Still, he adds, "A lot of emotion comes into play. You can't get to the place where you've eliminated judgment."

Kindley is a freelance writer in Torrington, Conn. He can be reached at mark@5thbusiness.net.



DOUGLAS JONES

Successful successions

These five tips will help you formalize succession planning:

- Get the CEO's commitment. Succession planning takes time and money. Make sure it is a value that senior managers share.
- Build an understanding among your staff that everyone needs to think about who can succeed them. Succession planning is not just for top-level managers.
- Establish well-defined job descriptions and identify skills needed to carry them out. Make success measurable, and then measure it.
- Promote teamwork. You can assume a level of competitiveness among staff members. They need to know that no one can succeed alone and that leaders can manage competitive energy.
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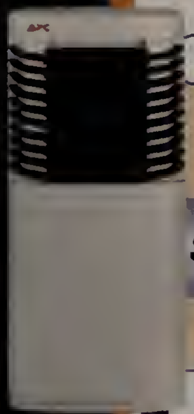

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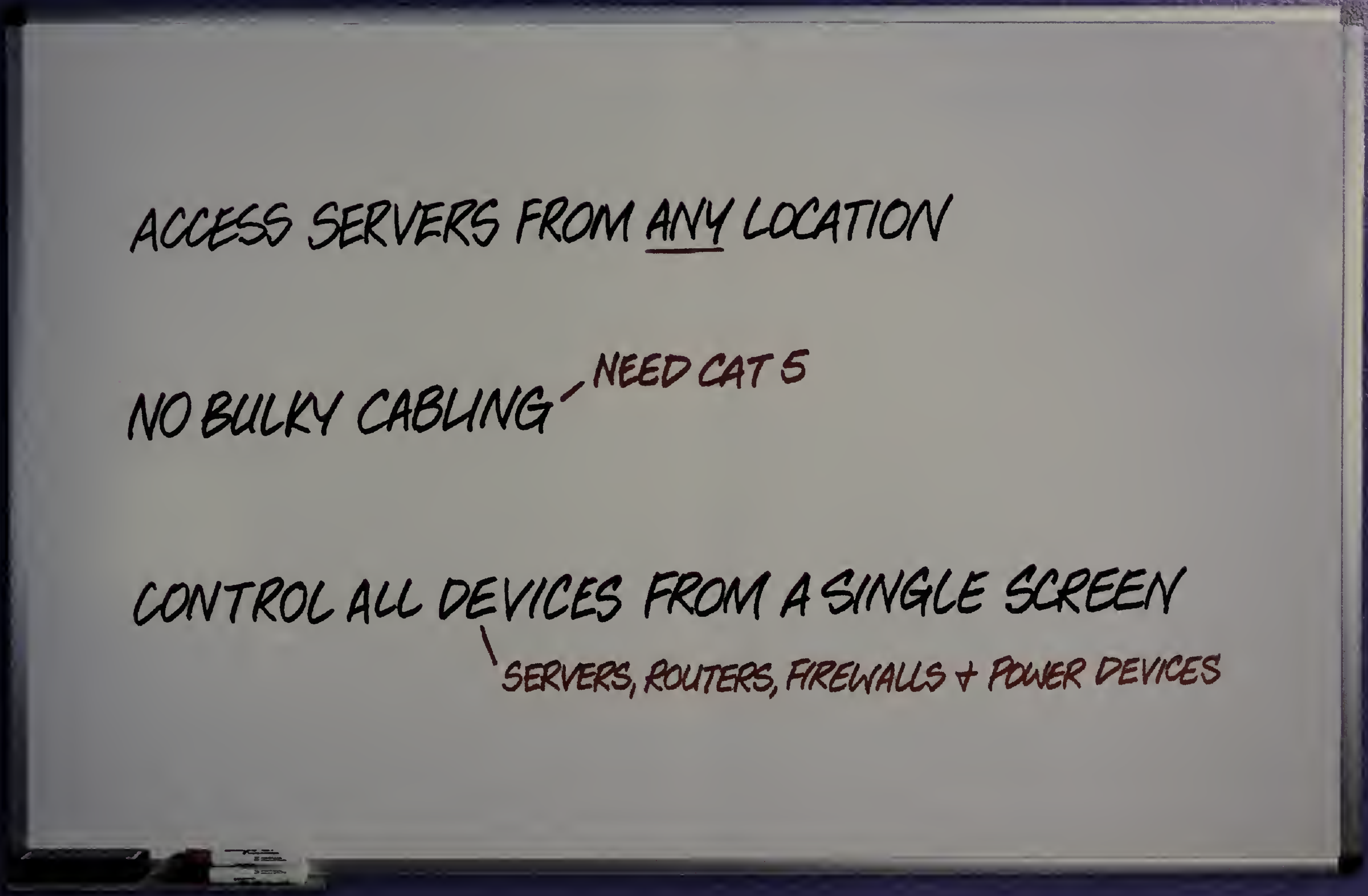

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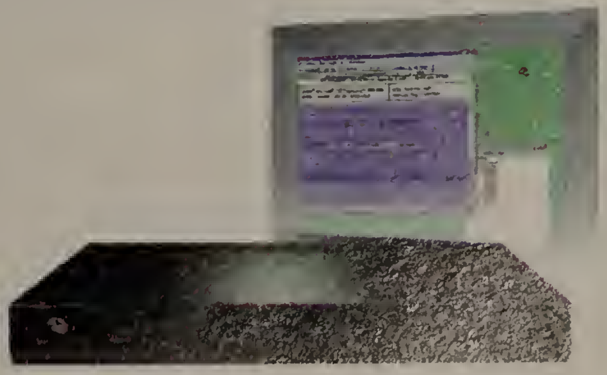

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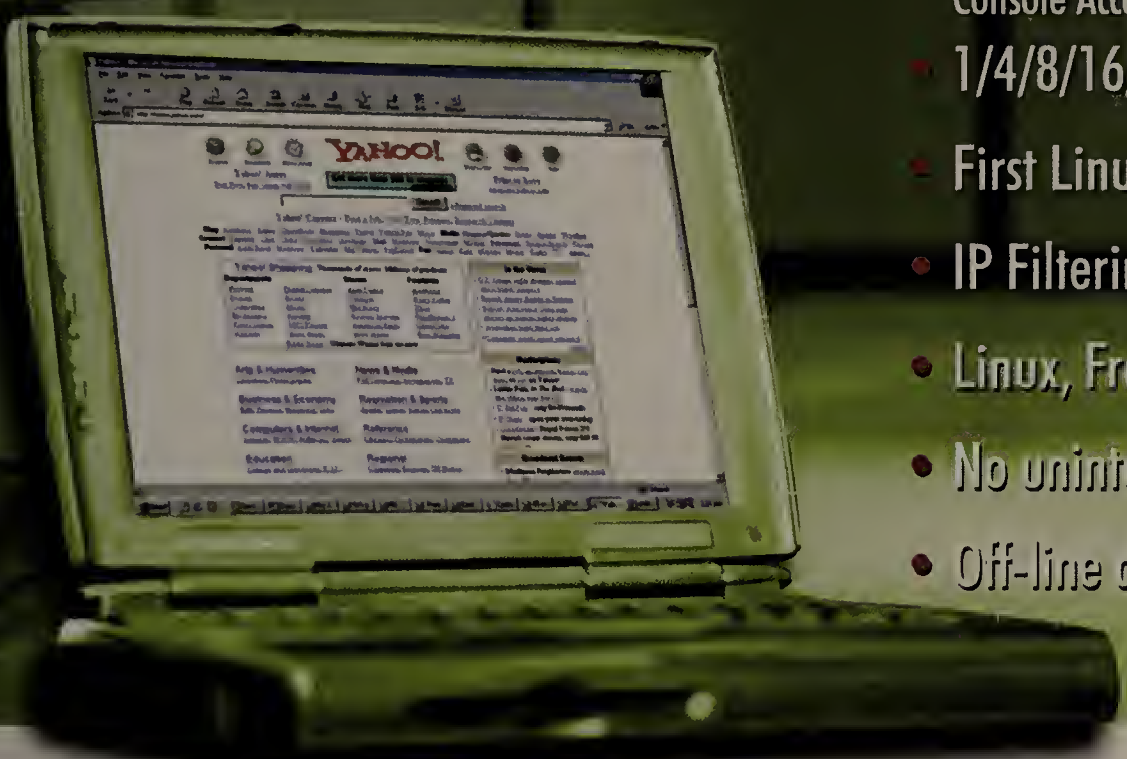

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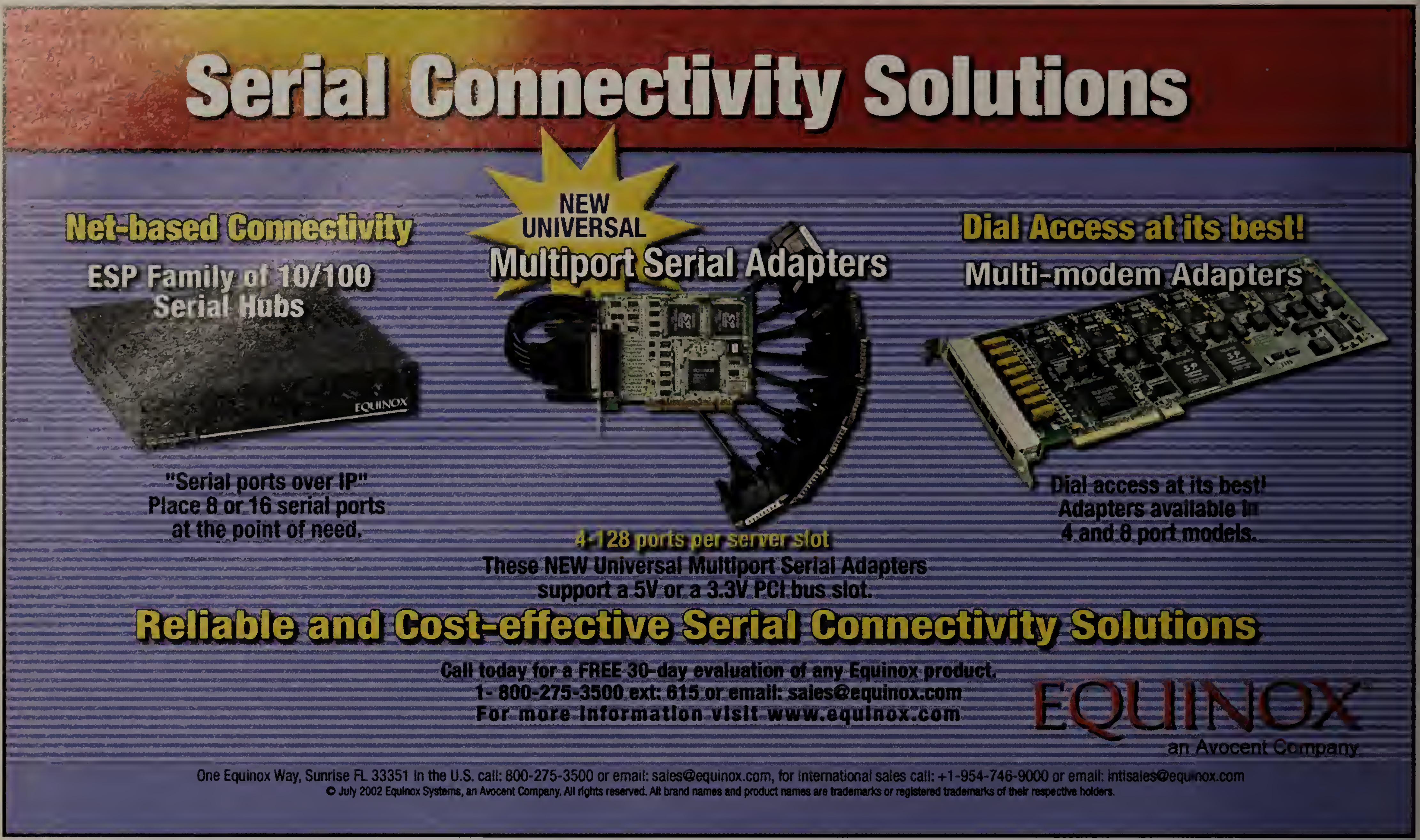

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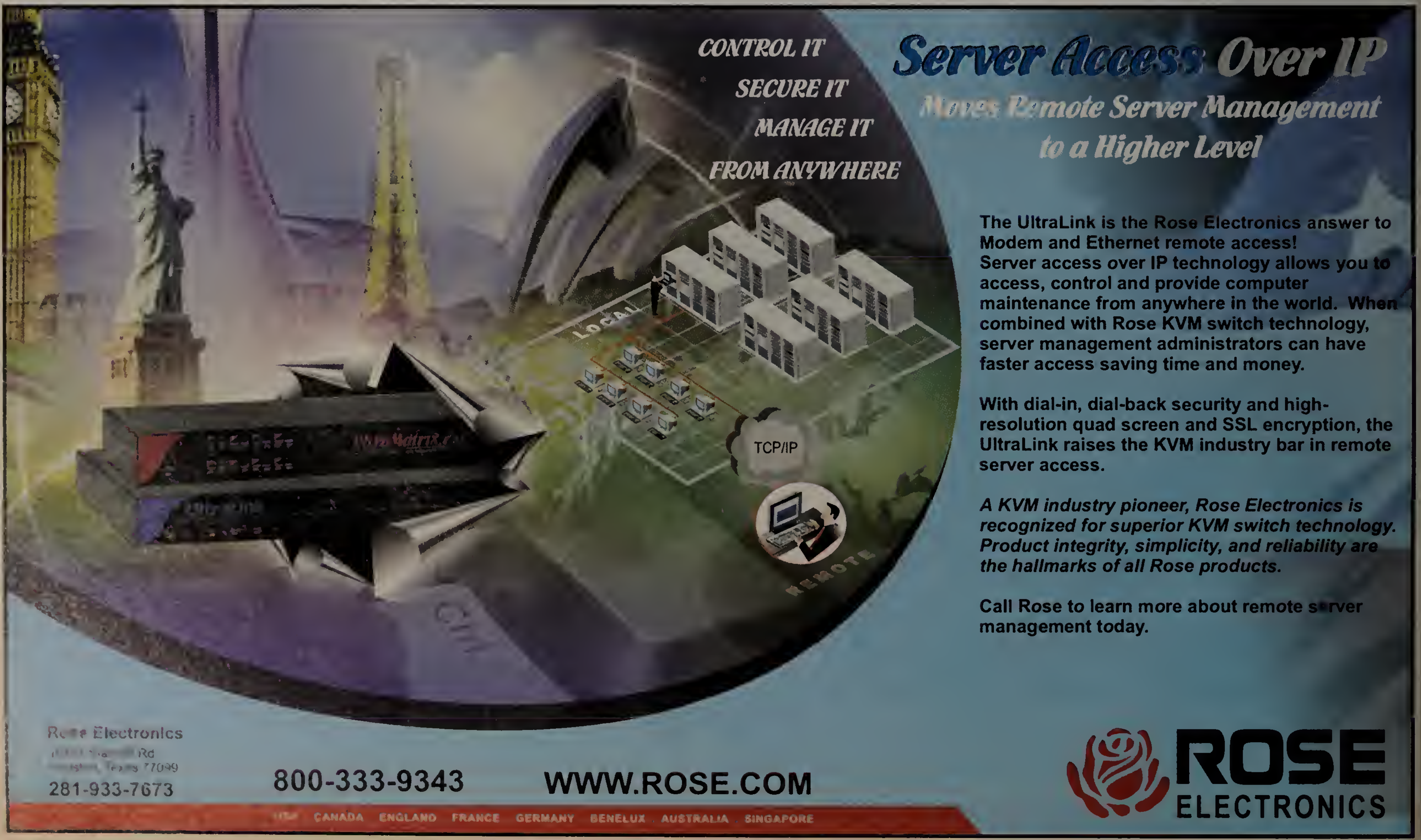

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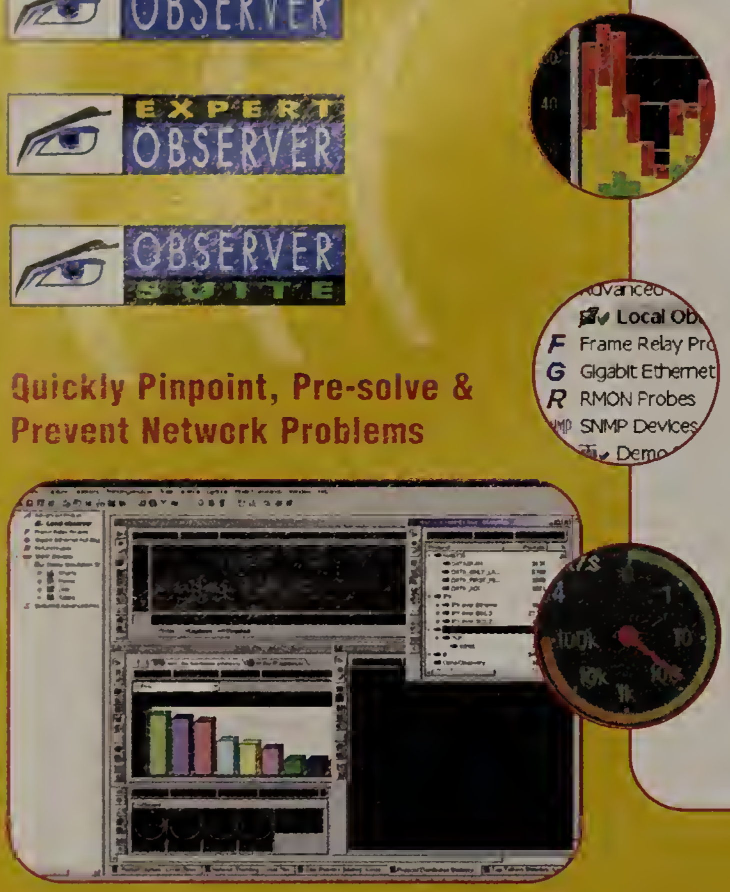

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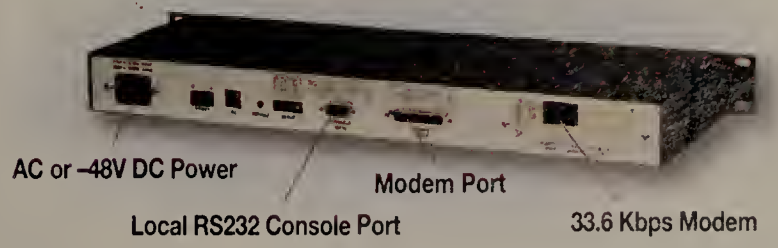

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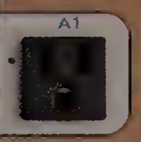

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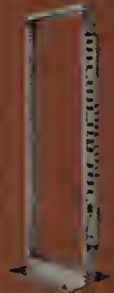

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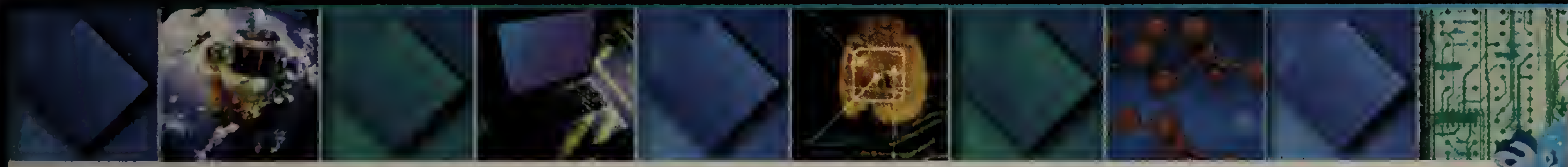

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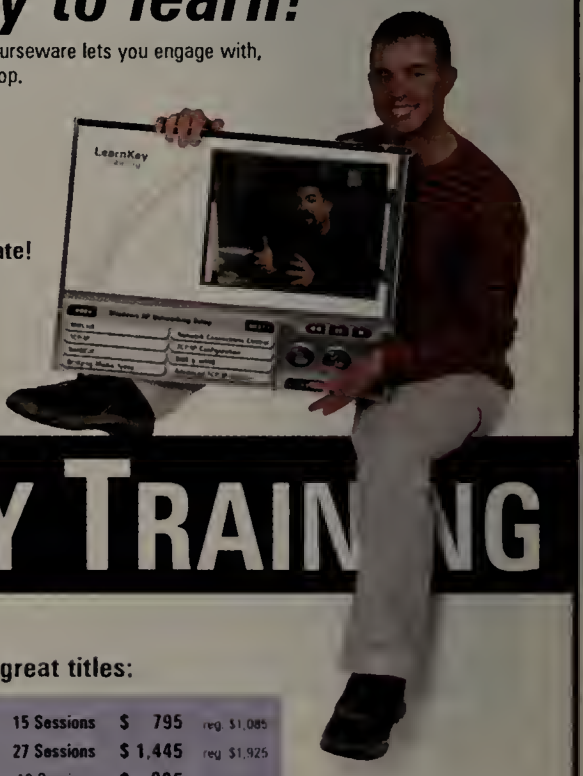

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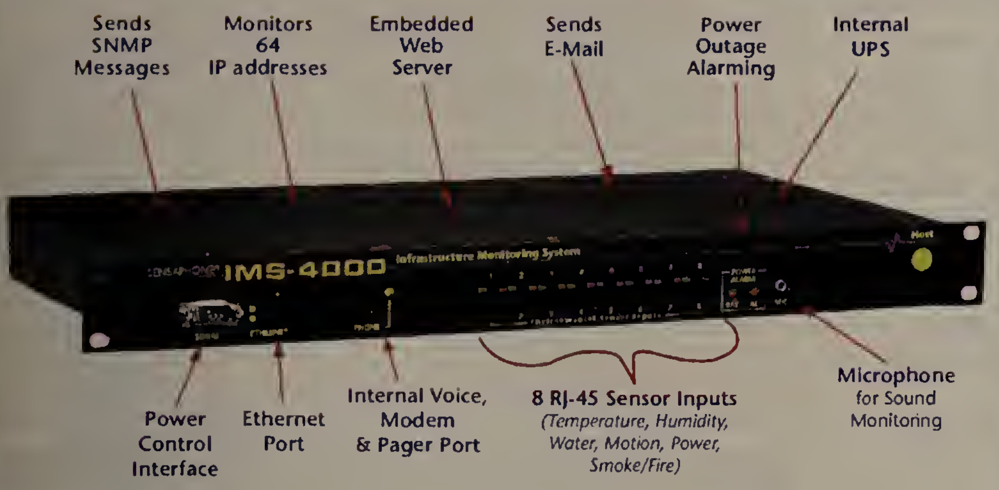
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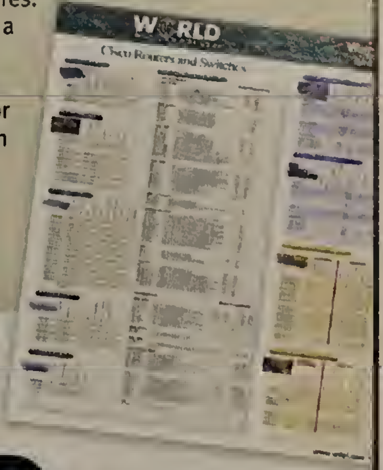

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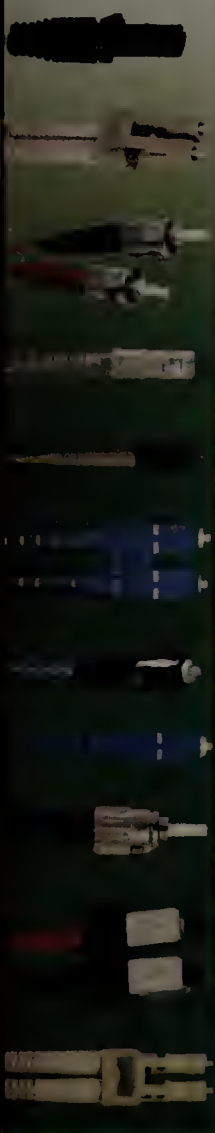

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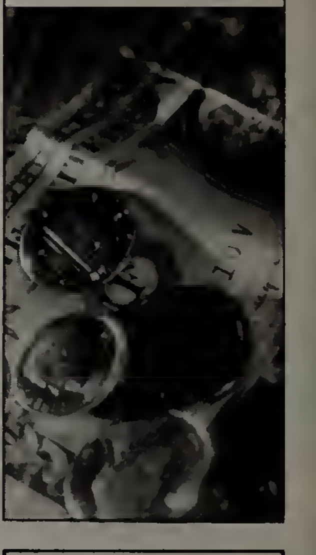

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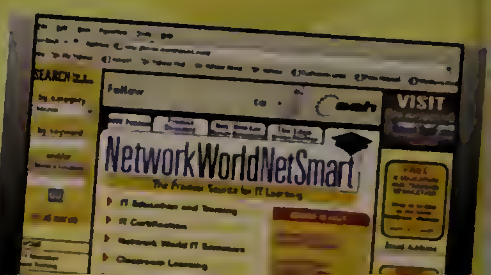

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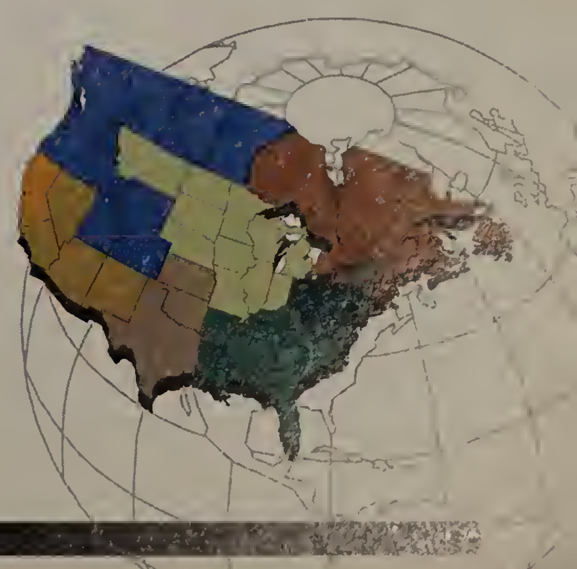

BackSpin Mark Gibbs

Picturing a chindogu

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— From the International Chindogu Society (www.nwfusion.com, DocFinder: 1345)

In the beginning, there was snail mail. And the geeks saw it was no good. So after laboring days and nights under the influence of way too much caffeine they begat e-mail and saw it was pretty good.

But other geeks looked at e-mail and thought "We can do better" and thus HTML mail was born . . . to the disgust of many old-school purists who say that, because some e-mail clients install by default in an unsecure state and they believe that, on the whole, users are far too stupid to even be trusted with a coffee spoon, HTML mail is an abhorrent and egregious sin that should be wiped from the face of the 'Net.

Be that as it may, other geeks joined by righteous marketing wonks decided that yet more perversion of e-mail was in order and thus created "sha-mail."

Sha-mail is a Japanglish word formed from a contraction of the Japanese word "shashin" (which means "photography") and the root of the techglish word "e-mail." Yep, it is the term for photographs sent by e-mail but specifically from cell phones.

It turns out that in Japan, camera-augmented cell phones are all the rage and have been since November 2000 when Japan-based J-Phone launched the world's first camera-equipped cell phones were launched by the Japan-based J-Phone. By March this year, J-Phone says that more than 4 million sha-mail-enabled cell phones were in circulation in Japan. And to thoroughly gild the lily, J-Phone recently launched a movie sha-mail service.

Now when I first heard of sha-mail I thought that it was a fine example of a chindogu — a Japanese word that means "useless invention."

<digression>According to the International Chindogu Society, ". . . dogu is Japanese for 'tool' and chin is Japanese for 'weird' (not to be confused with the Japanese for 'penis,' which is also chin). Thus, a chindogu is a weird tool."

To be a true example of a chindogu the invention must actually do something while being simultaneously and for all intents and purposes totally useless.</digression>

My first response to sha-mail was "So what?" The pictures are of low resolution and the transport service is expensive — all of which sounds very much like a chindogu.

However, on reflection I realize that given the huge popularity, rather than being a chindogu, sha-mail is actually an extremely important indicator of what people want from technology.

What people want from technology is not what they get from PCs. Average computer users approach their PCs with a job in mind — write a report, send a message, find out how fast the Dow is plummeting.

But when they start to do any of these things, they are confronted with error messages and warnings. They have to come to grips with maintenance tasks such as backups; installing and upgrading software; and error checking and defragging drives. Indeed, for many users, what a PC can do and what they use it for are separated by a Grand Canyon-sized gulf.

In contrast, sending pictures from your sha-mail-enabled phone is brain-dead easy.

Perhaps the computer's role in consumer communications will come to be less important than the role of devices such as sha-mail-enabled cell phones — which rather makes PCs look like a chindogu. But you already knew that, didn't you?

Weird chins to backspin@gibbs.com.

'NetBuzz News, insights, opinions and oddities

By Paul McNamara

What is it about e-mail?

"Hey, stupid!!!!"

That is the exact subject line — right down to the four exclamation points — of an e-mail recently sent to *Network World*. The body of the message is equally cheery, as the sender accuses the recipient of being "simple minded" and urges him to "wake up!"

Three things about this correspondence may surprise you:

It was not directed at Buzz.

The author actually did sign his name.

And even after being offered an opportunity to rethink the matter, the sender has no apparent regrets about addressing a fellow human being in such an utterly insulting manner.

OK, perhaps the third one isn't so surprising, given that most of us have encountered this type of rudeness in our in-box at one time or another.

But what exactly is it about e-mail that convinces grown-up men and women that it is acceptable to address other people in this manner? As someone who receives an awful lot of e-mail from strangers — many of whom do not see eye-to-eye with me — the question has long held a certain fascination.

So I put that question to Mr. Hey Stupid, hoping that perhaps he could offer insight into the mindset that lets a person behave so uncivilly toward another. In the interest of encouraging honest and candid introspection on his part, I assured the man that I had no intention of publishing his name (tempting though that was . . . and remains.)

Alas, the exercise proved largely unenlightening, but before we get to his reply, it is only fair that I share with you the reason for his wrath.

It was nothing more than a missing URL. More precisely, it was a hard-to-find URL in one of our e-mail newsletters. Through no fault of the newsletter writer, an advertisement appeared between what looked like the end of the newsletter and a link for a white paper the newsletter had referenced and our friendly correspondent wanted to read. Mr. Hey Stupid wasn't the only reader who had trouble finding the link, although he was the only one who reacted as if the writer had run over his puppy.

Here's how he explains himself:

"Sorry to hurt [the newsletter writer's] feelings, but I was upset and still am," he writes. "A 'stinger' in the subject window invariably generates a response."

There you have it: "Hey, Stupid!!!!" is a "stinger" that is designed to elicit a reply where presumably "Dear Sir" would not.

(By the way, I never suggested to the fellow that he had hurt anyone's feelings. Trust me, he had not.)

That was the sum total of his introspection. However, the man did ramble on for 400 more words about how grievously he had been wronged by that URL business.

"I hope you get the sense of this frustration," he implores.

Well, I certainly get a sense of the man.

Which brings us back to the main question: Why do people rant like schoolchildren in e-mail when, for the most part, they would never dream of doing so on the telephone or in person?

Yes, e-mail is by nature impersonal; there is no direct eye-to-eye or mouth-to-ear contact. Yes, the immediacy of the medium lets one flame first and think later.

Those are the standard answers, but they seem inadequate given that we've all been using e-mail for some time and should be well acquainted with those pitfalls.

Maybe I'm looking for a complex explanation where none exists.

Perhaps the answer is simply that we share this planet with a fair number of rude individuals — jerks, to be blunt — and there is nothing anyone can do to keep these folks from using e-mail.

Got a better theory? The address is buzz@nww.com.

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